**ö3GPP TSG-RAN2#AH-1801 *Tdoc R2-18xxxxx***

**Vancouver, Canada, 22-26 Jan 2018**

**Agenda Item: x.y**

**Source: Ericsson**

**Title: Review issue list for TS 38.331 EN-DC ASN.1 freeze**

**Version: 0.0**

**Document for: Discussion and decision**

# Introduction

This document provides an overview of list of issues resulting from the review of the PDU specification and related procedure text and field descriptions.

For some issues the proposed solution is indicated as well as the company & Tdoc introducing this in the standard. For some of the issues this document includes further considerations. The following companies volunteered for the review.

“ID” identifies the company, and consists of “X” (<letter>), as “E” for Ericsson.

|  |  |  |  |  |
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# Instructions for RIL and CR storage

RIL and Editorial CR is stored in <ftp://ftp.3gpp.org/Email_Discussions/RAN2/>.

Companies are requested to provide their review comments and change proposals directly in the stored documents (see Classification below). Companies are encouraged to continuously introduce their comments/changes in the RILs/CR, e.g. when one area have been reviewed (and not provide all comments together on the last day).

When storing the documents after providing updates, companies should **add their Company ID** (**one letter**, see section 1) to the file name.

Companies are encouraged to try to resolve collisions. Also the Rapporteur will take an active role in this (and storage/merging problems can be discussed via email). In future reviews, we can potentially use more sophisticated tools.

# Instructions for RIL

**Issue Number (I-No)**

All issues should be numbered in a format Xyyy where

* X is the unique ID (<letter>) assigned to each company, see the table in clause 1.
* yyy is a running number starting from 001, i.e. 001, 002, …. 999.
* Ex: “E103”.

To avoid duplicated I-No numbers, companies may use the table very last in this document.

**Description**

Describe the issue in a few words.

**Classification (Class):**

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| Class 1 | Straigthforward clarification/correction will not be included in RIL but company will directly include in “Minor corrections CR”. This can include small things like addition of need codes (as long as relatively straightforward) |
| Class 2 | Small issue i.e. solution requires some discussion but possible to concluded as part of ASN.1 review. Within column Details in the RIL, the company raising the issue is invited to suggest a proposed way forward, that other companies review and if not agreeable may suggest alternatives for. |
| Class 3 | More significant issue, i.e. requiring more extensive analysis by a contribution. Class 3 issues are within the scope of the ASN.1 review (i.e. does not concern more functional aspects). Companies are requested to volunteer for drafting a contribution (CR).  A contribution may address multiple issues, but these should be clearly marked. |
| Class 4 | Issue of type 4 are like type 3, with the exception that the issue is not only adressing ASN.1 aspects but also more functional aspects. Companies are still invited to draft a contribution, but this would be treated in the agenda item covering the concerned related functionality. |

Companies are requested to provide contribution details, to have an overview of the status (in particular regarding which issues are not covered).

**Details (proposed solution/ discussion)**

Mainly relevant for issues of class 2, the cell is intended to discuss/ agree the proposed way forward. The company raising the issue is invited to suggest a proposed way forward, that other companies review and if not agreeable may suggest alternatives for.

Companies are encouraged to descripe solutions in the same manner as they correct issues in CRs, i.e. propose changes that are shown in the same manner using change marks.

It is therefore suggested to use “**simulated change marks**” for the issue reporting, i.e.

* Added parts are marked with underlined red coloured text, e.g. new text .
* Deleted parts are marked with strikethough red coloured text, e.g. ~~delated text.~~
* If there is a need to high-light something by marking text with a colour, e.g. to high-light small changes, it is recommended that yellow colour is used, e.g. spelling error.
* Reason for these “simulated change marks” is to alow for more easy moving/copy/paste without loosing the changes.

Companies are encouraged to comment issues introduced by other companies, both on agreeing or objecting. These comments shall be **tagged with the company name** for easy search. E.g. “Ericsson: We agree”.

**Status/Ref (to be filled in by the Rapporteur)**

Status of the issue, in particular:

Class 2: indicate FFS if no (confirmed) way forward yet

Class 3: indicate company planning to bring a contribution

Class 4: same as 3, but also indicate agenda item

(coding/coloring TBD)

# Conclusion & recommendation

This paper includes a of list of issues resulting from the review of [1]. RAN2 is requested to endorse the status including the solutions proposed.

# References

[1] TS 38.331 RRC specification

# Review issue list (Annex)

#### Foreword

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 1 Scope

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#### 2 References

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#### 3 Definitions, symbols and abbreviations

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#### 3.1 Definitions

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#### 3.2 Abbreviations

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#### 4 General

#### 4.1 Introduction

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#### 4.2 Architecture

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#### 4.2.1 UE states and state transitions including inter RAT

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#### 4.2.2 Signalling radio bearers

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#### 4.3 Services

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#### 4.3.1 Services provided to upper layers

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#### 4.3.2 Services expected from lower layers

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#### 4.4 Functions

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#### 5 Procedures

#### 5.1 General

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#### 5.1.1 Introduction

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#### 5.1.2 General requirements

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#### 5.2 System information

Only MIB acquisition applicable for EN-DC.

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#### 5.3 Connection control

#### 5.3.1 Introduction

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#### 5.3.2 Paging

Targeted for completion in June 2018.

#### 5.3.3 RRC connection establihshment

Targeted for completion in June 2018.

#### 5.3.4 Initial security activation

Targeted for completion in June 2018.

#### 5.3.5 RRC reconfiguration

#### 5.3.5.1 General

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#### 5.3.5.2 Initiation

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#### 5.3.5.3 Reception of an RRCReconfiguration by the UE

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#### 5.3.5.4 Secondary cell group release

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#### 5.3.5.5 Cell Group configuration

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#### 5.3.5.5.1 General

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#### 5.3.5.5.2 Reconfiguration with synch

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#### 5.3.5.5.3 Logical Channel release

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#### 5.3.5.5.4 Logical Channel addition/modification

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#### 5.3.5.5.5 MAC entity configuration

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#### 5.3.5.5.6 RLF Timers & Constants configuration

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#### 5.3.5.5.7 SpCell Configuration

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#### 5.3.5.5.8 SCell Release

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#### 5.3.5.5.9 SCell Addition/Modification

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#### 5.3.5.6 Radio Bearer configuration

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#### 5.3.5.6.1 General

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#### 5.3.5.6.2 SRB release

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#### 5.3.5.6.3 SRB addition/ modification

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#### 5.3.5.6.4 DRB release

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#### 5.3.5.6.5 DRB addition/ modification

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#### 5.3.5.7 Full configuration

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#### 5.3.5.8 Security key update

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#### 5.3.5.9 Reconfiguration failure

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#### 5.3.5.9.1 Integrity check failure

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#### 5.3.5.9.2 Inability to comply with RRCReconfiguration

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#### 5.3.5.9.3 T304 expiry (Reconfiguration with synch Failure)

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#### 5.3.6 Counter check

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#### 5.3.7 RRC connection re-establishment

Targeted for completion in June 2018.

#### 5.3.8 RRC connection release

Targeted for completion in June 2018.

#### 5.3.9 RRC connection release requested by upper layers

Targeted for completion in June 2018.

#### 5.3.10 Radio resource configuration

Targeted for completion in June 2018.

#### 5.3.11 Radio link failure related actions

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#### i5.3.11.1 Detection of physical layer problems in RRC\_CONNECTED

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#### 5.3.11.2 Recovery of physical layer problems

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.3.11.3 Detection of radio link failure

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.3.12 UE actions upon leaving RRC\_CONNECTED

Targeted for completion in June 2018.

#### 5.3.13 UE actions upon PUCCH/SRS release request

Targeted for completion in June 2018.

#### 5.4 Inter-RAT mobility

Targeted for completion in June 2018.

#### 5.5 Measurements

#### 5.5.1 Introduction

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.2 Measurement configuration

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.2.1 General

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.2.2 Measurement identity removal

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.2.3 Measurement identity addition/ modification

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.2.4 Measurement object removal

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.2.5 Measurement object addition/ modification

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#### 5.5.2.6 Reporting configuration removal

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#### 5.5.2.7 Reporting configuration addition/ modification

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#### 5.5.2.8 Quantity configuration

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#### 5.5.2.9 Measurement gap configuration

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.2.10 Reference signal measurement timing configuration

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.3 Performing measurements

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#### 5.5.3.1 General

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.3.2 Layer 3 filtering

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.3.3 Derivation of measurement results

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.4 Measurement report triggering

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z003 | In current ASN.1, the useWhiteCellList IE is only introduced when reportType is set to eventTriggered, but in the text description, only reportCGI is excluded in subclause 2>, which mismatch with the ASN.1, the proposed solution is aligned with the current ASN.1.  In addition, based on the RAN2 AH agreement on whiteCellList :”If whitelisted cells are provided, only whitelisted cells are used in event evaluation and reporting (as in LTE)”, it’s a bit confused about the “as in LTE”, so we suggest to make some further clarification on whether whiteCellList can be supported in periodical measurement, and we will prepare contribution on this aspect. | 3 | 5.5.4.1 General If security has been activated successfully, the UE shall:  1> for each *measId* included in the *measIdList* within *VarMeasConfig*:  2> if the corresponding *reportConfig* ~~does not~~ includes a *reportType* set to *~~reportCGI~~eventTriggered* :  3> if the corresponding *measObject* concerns NR;  4> if the eventA1 or eventA2 is configured in the corresponding *reportConfig*:  5> consider only the serving cell to be applicable;  4> else:  5> if *useWhiteCellList* is set to TRUE:  6> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is included in the *whiteCellsToAddModList* defined within the *VarMeasConfig* for this measId;  5> else:  6> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this measId;  5> for events involving a serving cell on one frequency and neighbours on another frequency, consider the serving cell on the other frequency as a neighbouring cell;  2> if the corresponding *reportConfig* inlcudes a *reportType* set to *periodical*:  3> if the corresponding *measObject* concerns NR;  4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this measId; | ZTE will prepare a Tdoc |
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#### 5.5.4.1 General

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.4.2 Event A1 (Serving becomes better than threshold)

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.4.3 Event A2 (Serving becomes worse than threshold)

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.4.4 Event A3 (Neighbour becomes offset better than PCell/ PSCell)

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| --- | --- | --- | --- | --- |
| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z004 | In legacy LTE DC, the usePSCell can be set by MeNB to control the compared serving cell(i.e. PSCell or PCell), but in EN-DC, for SN configured measurement, usePSCell is not needed anymore, because only PSCell can be used for SN A3 measurement, and the usePSCelll is not supported in current ASN.1, so we can delete the relevant description.  In addition, considering it might be supported in NR-NR DC in the future release, we think it is future proof to keep the title of this section, but add the clear description for EN-DC case. | 2 | 5.5.4.4 Event A3 (Neighbour becomes offset better than PCell/ PSCell) The UE shall:  1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;  1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;   1. in EN-DC, use the PSCell for *Mp, Ofp* and *Ocp*;   ~~1> if~~ *~~usePSCell~~* ~~of the corresponding~~ *~~reportConfig~~* ~~is set to~~ *~~true~~*~~:~~  ~~2> use the PSCell for~~ *~~Mp~~*~~,~~ *~~Ofp and Ocp~~*~~;~~  ~~1> else:~~  ~~2> use the PCell for~~ *~~Mp~~*~~,~~ *~~Ofp and Ocp~~*~~;~~  NOTE The cell(s) that triggers the event is on the frequency indicated in the associated *measObject* which may be different from the frequency used by the PCell/ PSCell. |  |
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#### 5.5.4.5 Event A4 (Neighbour becomes better than threshold)

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.5.4.6 Event A5 (PCell/ PSCell becomes worse than threshold1 and neighbour becomes better than threshold2)

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z005 | Similar comments with A3 event | 2 | 5.5.4.6 Event A5 (PCell/ PSCell becomes worse than threshold1 and neighbour becomes better than threshold2) The UE shall:  1> consider the entering condition for this event to be satisfied when both condition A5-1 and condition A5-2, as specified below, are fulfilled;  1> consider the leaving condition for this event to be satisfied when condition A5-3 or condition A5-4, i.e. at least one of the two, as specified below, is fulfilled;   1. in EN-DC, use the PSCell for *Mp, Ofp* and *Ocp*;   ~~1> if~~ *~~usePSCell~~* ~~of the corresponding~~ *~~reportConfig~~* ~~is set to~~ *~~true~~*~~:~~  ~~2> use the PSCell for~~ *~~Mp~~*~~;~~  ~~1> else:~~  ~~2> use the PCell for~~ *~~Mp~~*~~;~~  NOTE: The cell(s) that triggers the event is on the frequency indicated in the associated *measObject* which may be different from the frequency used by the PCell/ PSCell. |  |
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#### 5.5.4.7 Event A6 (Neighbour becomes offset better than SCell)

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z006 | In EN-DC, from UE’s perspective, the SN PSCell can also be treated as a SCell, different from legacy LTE, it may be confused whether A6 can be configured by SN for intra-freq PSCell change? or only A3 event can be configured?  In order to avoid duplication of functions, we suggest that in EN-DC, only A3 event can be used to trigger intra-freq PSCell change, so we think an explicit note is needed to explain the usecase of A6 for EN-DC. | 2 | 5.5.4.7 Event A6 (Neighbour becomes offset better than SCell) The UE shall:  1> consider the entering condition for this event to be satisfied when condition A6-1, as specified below, is fulfilled;  1> consider the leaving condition for this event to be satisfied when condition A6-2, as specified below, is fulfilled;  1> for this measurement, consider the (secondary) cell that is configured on the frequency indicated in the associated *measObjectNR* to be the serving cell;  NOTE 1: The neighbour(s) is on the same frequency as the SCell i.e. both are on the frequency indicated in the associated *measObject*.  NOTE 2: In EN-DC, The cell(s) that triggers the event is on the frequency indicated in the associated *measObject* shall be different from the frequency used by the PSCell. |  |
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#### 5.5.5 Measurement reporting

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#### 5.5.5.1 Reporting of beam measurement information

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.6 UE capabilities

#### 5.6.1 UE capability transfer

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.7 Other

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.7.1 DL information transfer

Targeted for completion in June 2018.

#### 5.7.2 UL information transfer

Targeted for completion in June 2018.

#### 5.7.3 SCG failure information

#### 5.7.3.1 General

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### 5.7.3.2 Initiation

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#### 5.7.3.3 Failure type determination

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#### 5.7.3.4 Setting the contents of FailureReportSCGtoOtherRAT

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#### 6 Protocol data units, formats and parameters (ASN.1)

#### 6.1 General

#### 6.1.1 Introduction

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#### 6.1.2 Need codes for optional downlink fields

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#### 6.2 RRC messages

#### 6.2.1 General message structure

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#### – NR-RRC-Definitions

#### – BCCH-BCH-Message

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#### – DL-DCCH-Message

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### – UL-DCCH-Message

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#### 6.2.2 Message definitions

#### – MIB

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#### – MeasurementReport

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#### – RRCReconfiguration

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z081 | In order have a futureproof design and provide the possibility for the efficient reconfiguration from SCG to MCG (i.e. without interruption to the data transfer over SCG), the cell group id of the MCG should be configurable, and a separate IE should be introduced to indicate the cell group id for the MCG. With this change, both the MCG andSCG will be configured by the same IE *CellGroupToAddModList* and there is no restriction that the MCG should always be the cell with ID0. | 4 | RRCReconfiguration-IEs ::= SEQUENCE {  -- Configuration of Radio Bearers (DRBs, SRBs) including SDAP/PDCP.  -- In In EN-DC this field may only be present if the RRCReconfiguration  -- is transmitted over SRB3.  radioBearerConfig RadioBearerConfig OPTIONAL, -- Need M  -- Configuration of primary and secondary cell groups (Dual Connectivity):  ~~masterCellGroupConfig CellGroupConfig~~  masterCellGroupID CellGroupId OPTIONAL, -- Need M  ~~secondary~~CellGroupToAddModList SEQUENCE (SIZE (1..maxSCellGroups)) OF CellGroupConfig OPTIONAL, -- Need M  ~~secondary~~CellGroupToReleaseList SEQUENCE (SIZE (1..maxSCellGroups)) OF CellGroupId OPTIONAL, -- Need M  measConfig MeasConfig OPTIONAL, -- Need M  lateNonCriticalExtension OCTET STRING OPTIONAL,  nonCriticalExtension SEQUENCE{} OPTIONAL  } | ZTE will have a Tdoc for this issue at the upcoming meeting. |
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#### – RRCReconfigurationComplete

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#### – SIB1

#### 6.3 RRC information elements

#### – SetupRelease Information Element

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#### 6.3.1 System information blocks

#### 6.3.2 Radio resource control information elements

#### – *Alpha*

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### – DRB-Identity

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### – BandwidthPart-Config

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z009 | The configuration information for RACH and PUCCH should be optional, need R. PUSCH related information should be optional, need M. | 2 | UplinkBandwidthPart ::= SEQUENCE {  genericParameters BandwidthPart, -- Frequency location of the uplink "direct current" frequency.  -- Corresponds to L1 parameter 'UL-BWP-DC'. (see 38.211, section FFS\_Section)  directCurrentLocation INTEGER (0..3299) OPTIONAL,  -- FFS\_CHECK: Several (UE specific) BWPs may be configured with RACH resources. Hence, they must be provided with  -- the information in RACH-ConfigCommon... even though it is in this case strictly speaking not a cell-specific parameter.  -- OK to keep or re-structure the RACH config?  rach-ConfigCommon RACH-ConfigCommon OPTIONAL, --Need R  pusch-ConfigCommon PUSCH-ConfigCommon OPTIONAL, --Need R  pusch-Config PUSCH-Config OPTIONAL, --Need M -- FFS: Is the PUSCH also BWP-specific??    pucch-ConfigCommon PUCCH-ConfigCommon OPTIONAL, --Need R  pucch-Config PUCCH-Config OPTIONAL --Need R  } |  |
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#### – CellGroupConfig

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z010 | It is specified in RRC that "CellGroupConfig with cellGroupId 0 is used for the MCG." .However, the IE CellGroupId can not be used to indicate the ID 0 (CellGroupId ::= INTEGER (1.. maxSCellGroups)).  To indicate 0, we can either revise the range of IE CellGroupId or set the IE as optional (absence of this IE means 0). | 2 | CellGroupConfig ::= SEQUENCE {  cellGroupId CellGroupId  ……  }  It is proposed to revise the range of IE CellGroupId as follows:  CellGroupId ::= INTEGER (~~1~~0.. maxSCellGroups) |  |
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#### – CellIndexList

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### – ControlResourceIndex

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### – CrossCarrierSchedulingConfig

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### – CSI-MeasConfig

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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| Z012 | For the “resourceMapping” IE in CSI-IMResourceConfig, according to L1 parameter, two separate IEs could be introduced, and in our view, the value range [0..9] of subcarrier location is still open in RAN1 discussion, so we suggest to keep it FFS. | 2 | CSI-IM-Resource ::= SEQUENCE {  csi-IM-ResourceId CSI-IM-ResourceId,  -- The resource element pattern for the CSI-IM resource  -- Corresponds to L1 parameter 'CSI-IM-RE-pattern' (see 38.214, section 5.2.2.3.4)  csi-IM-ResourceElementPattern ENUMERATED {pattern2-2, pattern4-1},    -- OFDM symbol and subcarrier occupancy of the CSI-IM resource within a slot  -- Corresponds to L1 parameter 'CSI-IM-ResourceMapping' (see 38.214, section 5.2.2.3.4)  -- FFS\_Values: RAN1 indicated “symbol locations: [0..13] and subcarrier locations: [0..9]” 🡺 Should this be a bitmap of 9x13? Or two separate?  resourceMapping ~~ENUMERATED {ffsTypeAndValue}~~SEQUENCE {  symbolLocation INTEGER (0..13),  subcarrierLocation ENUMERATED {ffsTypeAndValue}  } OPTIONAL,  -- Frequency-occupancy of CSI-IM. Corresponds to L1 parameter 'CSI-IM-FreqBand' (see 38.214, section 5.2.2.3.2)  freqBand FFS\_Value OPTIONAL} |  |
| Z013 | The value “ssb-RSRP” is missing in the value range of reportQuantity, and to be more concise, we suggest to modify the IE type and use an conditional IE for pdsch-BundleSizeForCSI. | 2 | -- Configuration of a CSI-Report sent on L1 (e.g. PUCCH) (see 38.214, section 5.2.1)  CSI-ReportConfig ::= SEQUENCE {  reportConfigId CSI-ReportConfigId,  ... ...  -- The CSI related quanities to report (see 38.214, section REF)  reportQuantity  ~~CHOICE {~~  ~~none NULL,~~  ~~cri-RI-PMI-CQI NULL,~~  ~~cri-RI-i1 NULL,~~  ~~cri-RI-i1-CQI SEQUENCE {~~  ~~-- PRB bundling size to assume for CQI calcuation when reportQuantity is CRI/RI/i1/CQI~~  ~~-- Corresponds to L1 parameter 'PDSCH-bundle-size-for-CSI' (see 38.214, section FFS\_Section)~~  ~~pdsch-BundleSizeForCSI ENUMERATED {n2, n4} OPTIONAL~~  ~~},~~  ~~cri-RI-CQI NULL,~~  ~~cri NULL,~~  ~~cri-RSRP NULL,~~    ~~cri-RI-LI-PMI-CQI NULL~~  ~~}~~ENUMERATED {none, cri-RI-PMI-CQI, cri-RI-i1, cri-RI-i1-CQI, cri-RI-CQI, cri, cri-RSRP, ssb-RSRP, cri-RI-LI-PMI-CQI},  pdsch-BundleSizeForCSI ENUMERATED {n2, n4} OPTIONAL, --Cond CRI-RI-I1-CQI  ... ... |  |
| Z014 | The value range of frequencyDomainAllocation in RAN1 L1 excel is “Starting subcarrier:  X = 1 port: no restriction  Y = 2: constrained to be one among even subcarriers in an RB  Y = 4: constrained to be one among subcarriers 0, 4, 8 in an RB”, it didn’t mean to use bitmap in ASN.1, , so we sugget to use the same coding method as firstOFDMSymbolTimeDomain. | 2 | -- OFDM symbol location(s) in a slot and subcarrier occupancy in a PRB of the CSI-RS resource  -- Corresponds to L1 parameter 'CSI-RS-ResourceMapping' (see 38.214, section 5.2.2.3.1)  resourceMapping SEQUENCE {  -- Frequency domain allocation within a physical resource block in accordance with 38.211, table 7.4.1.5.2-1.  -- The number of bits that may be set to one depend on the chosen row in that table.  frequencyDomainAllocation CHOICE {  row1 ~~BIT STRING (SIZE (4))~~INTEGER (0..15),  row2 ~~BIT STRING (SIZE (12))~~INTEGER (0..4095),  row4 ~~BIT STRING (SIZE (3))~~INTEGER (0..7),  other ~~BIT STRING (SIZE (6))~~INTEGER (0..63)  },  -- Time domain allocation within a physical resource block. The field indicates the first OFDM symbol in the PRB used for CSI-RS.  -- Value 2 is supported only when DL-DMRS-typeA-pos equals 3.  firstOFDMSymbolInTimeDomain INTEGER (0..13)  }, |  |
| Z015 | In 38.214 section 5.2.1.2 :“*with each Resource Set consisting of CSI-RS resources (higher layer parameters NZP-CSI-RS-ResourceConfigList and CSI-IM-ResourceConfigList) and SS/PBCH Block resources used for L1-RSRP computation (higher layer parameter resource-config-SS-list).*” It seems no restriction that ssbResouces can only be configured with NZPResouceSets, so the Cond should be removed. | 2 | CSI-ResourceConfig ::= SEQUENCE {  -- FFS: Where is the CSI-ResourceConfigId used?  csi-ResourceConfigId CSI-ResourceConfigId,  -- Contains up to maxNrofCSI-ResourceSets resource CSI-ReosurceSets if ResourceConfigType is 'aperiodic' and maxNrofCSI-ResourceSets otherwise.  -- Corresponds to L1 parameter 'ResourceSetConfigList' (see 38.214, section 5.2.1.3.1)  csi-RS-ResourceSets CHOICE {  nzp-CSI-RS-ResourceSets SEQUENCE (SIZE (1..maxNrofCSI-ResourceSets)) OF NZP-CSI-RS-ResourceSet,  csi-IM-ResourceSets SEQUENCE (SIZE (1..maxNrofCSI-ResourceSets)) OF CSI-IM-ResourceSet  },  -- List of SSB resources used for beam measurement and reporting in a resource set  -- Corresponds to L1 parameter 'SSBResourceMeasList' (see 38,214, section FFS\_Section)  ssb-Resources SEQUENCE (SIZE (1..maxNrofSSB-Resources-1)) OF CSI-SSB-Resource OPTIONAL, ~~--Cond OnlyWithNZPResourceSets~~  -- The DL BWP which the CSI-RS assocaited with this CSI-ResourceConfig are located in.  -- Corresponds to L1 parameter 'BWP-Info' (see 38.214, section FFS\_Section)  bandwidthPartId BandwidthPartId,  -- Time domain behavior of resource configuration. Corresponds to L1 parameter 'ResourceConfigType' (see 38.214, section 5.2.2.3.5)  resourceType CHOICE {  aperiodic NULL,  semiPersistent NULL,  periodic SEQUENCE {  -- For a target periodic CSI-RS, contains a reference to one TCI-RS-Set in TCI-States for providing the QCL source and  -- QCL type. For periodic CSI-RS, the source can be SSB or another periodic-CSI-RS.  -- Corresponds to L1 parameter 'QCL-Info-PeriodicCSI-RS' (see 38.214, section FFS\_Section)  qcl-InfoPeriodicCSI-RS TCI-RS-SetId OPTIONAL  }  }, |  |
| Z016 | According to the description in 38.214 section 5.2.1.2: “Each Resource setting is located in the BWP identified by the higher layer parameter BWP-info, and *all linked Resource Settings of a CSI Report Setting have the same BWP*.” Which means a CSI-ReportConfig should be linked to one BWP, and the intention of BWPInfo in reportConfig is to represent the linked DL BWP, in this case, the explicit bandwidthPartId indication is not needed any more, UE can derive the associated BWP by the bandwidthPartId included in the linked CSI-ResourceConfig. | 2 | -- Configuration of a CSI-Report sent on L1 (e.g. PUCCH) (see 38.214, section 5.2.1)  CSI-ReportConfig ::= SEQUENCE {  reportConfigId CSI-ReportConfigId,  ... ...  -- Port indication for RI/CQI calculation. For each CSI-RS resource in the linked ResourceConfig for channel measurement,  -- a port indication for each rank R, indicating which R ports to use. Applicable only for non-PMI feedback.  -- Corresponds to L1 parameter 'Non-PMI-PortIndication' (see 38.214, section FFS\_Section)  non-PMI-PortIndication FFS\_Value OPTIONAL~~,~~  ~~-- Which DL BWP the CSI-ReportConfig is associated with. (see 38.214, section FFS\_Section)~~  ~~-- FFS\_CHECK: Should it be possible to link a report to several BWPs? If not, shouldn’t the report configuration be in the BWP?~~  ~~-- FFS\_CHECK: Should it be possible to link a report to the initial BWP? If so, which ID does that have?~~  ~~bandwidthPartId BandwidthPartId~~  OPTIONAL  } |  |
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| Z019 | 1. Per RAN1’s input, up to maximum 128 reportTrigger can be configured. So a list of reportTrigger should be defined.  2. Per RAN1’s most updated input, for aperiodic trigger, each ReportConfig in each trigger state is linked to one or two or three P/SP/AP CSI-RS resource setting(s). If a resource setting linked to a ReportConfig has multiple aperiodic resource sets and only a subset of the aperiodic resource sets is associated with the trigger state, a bitmap (with the bitwidth Nbit =number of resource sets in a resource setting. Number of one(s) in the bitmap None = 1 (FFS on 2) for CSI acquisition) is RRC configured per trigger state per resource setting to select CSI-IM/NZP CSI-RS resource set(s) from the resource setting.  The current aperiodic type in reportTrigger doesn’t reveal the above features correctly, including the following aspects:   1. . Each ReportConfig should be linked to up to 3 resource settings instead of linked to resource set directly. 2. . The associated ResourceSets (corresponding to L1 parameter 'ResourceSetBitmap') for each linked resource setting for each resource setting is a bitmap with bitwidth 16.   Two possible approaches are provided.  3. With the modification of the bullet1 above, the qcl-Info-aPeriodicReportingTrigger (corresponding to RAN1 parameter QCL-Info-aPeriodicReportingTrigger: For a trigger state within aperiodicReportTrigger that triggers a ap-CSI-RS resource set, contains a list of references to TCI-RS-SetConfig's in TCI-States for providing the QCL source and QCL type for each ap-CSI-RS resource within the triggered set of ap-CSI-RS resources. The length of the list is equal to the number of ap-CSI-RS resources in the set (CSI-RS-ResourceSetConfig)) is configured per resource set, so the place of the IE should be changed correspondingly, i.e. to be associated to each resource set.  4. aperiodicTriggeringOffset (corresponding to RAN1 parameter Aperiodic-NZP-CSI-RS-TriggeringOffset: Offset X between the slot containing the DCI that triggers a set of aperiodic NZP CSI-RS resources and the slot in which the CSI-RS resource set is transmitted.): the IE is applied only for AP CSI-RS resource. Considering that the IE is used only if an AP CSI-RS resource is included in the report trigger, we think it can be moved into to the aperiodic configure of the reportTrigger.  A paper will be prepared by ZTE on this aspect. | 3 | Approach 1:  reportTriggers SEQUENCE(SIZE(1..maxNrofreportTriggers)) OF reportTrigger  reportTrigger SEQUENCE {  aperiodic SEQUENCE {  -- The CSI-ReportCongig (their IDs) assocaited with this reportTrigger  associatedReportConfigs SEQUENCE (SIZE (1..maxNrofReportConfigIdsPerTrigger)) OF CSI-ReportConfigId,  --the associated ResourceConfigs for each ReportConfig  associatedResourceConfigs SEQUENCE(SIZE (1..maxNrofReportConfigIdsPerTrigger)) OF associatedResourceConfig  --each ReportConfig is linked to one or two or three P/S/AP CSI-RS resource settings.  associatedResourceConfig SEQUENCE(SIZE (1..3)) OF associatedResourceInfor  associatedResourceInfor SEQUENCE{  csi-ResourceConfigId CSI-ResourceConfigId,  --bitmap with the bitwidth Nbit =number of resource sets (max number Nbit =16)  --in a linked resource setting per report trigger state.  -- Number of one(s) in the bitmap None = 1 for CSI acquisition and beam management  AssociatedResourceset BIT STRING (SIZE (16))  -- For a trigger state within aperiodicReportTrigger that triggers a ap-CSI-RS  --resource set, contains a list of  -- references to TCI-RS-SetConfig's in TCI-States for providing the QCL source and  --QCL type for each ap-CSI-RS  -- resource within the triggered set of ap-CSI-RS resources. The length of the  --list is equal to the number of  -- aperiodic CSI-RS resources in the set (CSI-RS-ResourceSet). For a target  --aperiodic CSI-RS assoicated with each  -- triggering state, contains a reference to one TCI-RS-Set in TCI-States for  --providing the QCL source and QCL type.  -- Corresponds to L1 parameter 'QCL-Info-aPeriodicReportingTrigger' (see 38.214, section FFS\_Section)  qcl-Info-aPeriodicReportingTrigger SEQUENCE (SIZE(1..ffsValue)) OF TCI-RS-SetId OPTIONAL  -- Offset X between the slot containing the DCI that triggers a set of aperiodic --NZP CSI-RS resources and the slot in which the  -- CSI-RS resource set is transmitted. When the field is absent the UE applies  --the value 0.  aperiodicTriggeringOffset FFS\_Value OPTIONAL    ~~-- bitmap with the bitwidth Nbit =number of resource sets (max number Nbit = 64) in a linked resource setting per report trigger tate.~~  ~~-- Number of one(s) in the bitmap None = 1 for CSI acquisition (FFS 1<= None <= 64 for beam management).~~  ~~-- FFS: To enforce the number of linked resources, the linking information should instead be in the report that uses the resource~~  ~~-- Corresponds to L1 parameter 'ResourceSetBitmap' (see 38.214, section FFS\_Section)~~  ~~-- FFS\_FIXME: The following list assumes that all NZP- and IM resource sets use a common ID space. But that is not ensured~~  ~~-- due to having separate lists of sets.~~  ~~associatedResourceSets SEQUENCE (SIZE (1..64)) OF CSI-ResourceSetId~~ OPTIONAL,  ~~-- For a trigger state within aperiodicReportTrigger that triggers a ap-CSI-RS resource set, contains a list of~~  ~~-- references to TCI-RS-SetConfig's in TCI-States for providing the QCL source and QCL type for each ap-CSI-RS~~  ~~-- resource within the triggered set of ap-CSI-RS resources. The length of the list is equal to the number of~~  ~~-- aperiodic CSI-RS resources in the set (CSI-RS-ResourceSet). For a target aperiodic CSI-RS assoicated with each~~  ~~-- triggering state, contains a reference to one TCI-RS-Set in TCI-States for providing the QCL source and QCL type.~~  ~~-- Corres~~ponds to L1 parameter 'QCL-Info-aPeriodicReportingTrigger' (see 38.214, section FFS\_Section)  ~~qcl-Info-aPeriodicReportingTrigger SEQUENCE (SIZE(1..ffsValue)) OF TCI-RS-SetId OPTIONAL~~  },  semiPersistentOnPUSCH SEQUENCE {  associatedReportConfig CSI-ReportConfigId  }  }  Approach 2:  reportTriggers SEQUENCE(SIZE(1..maxNrofreportTriggers)) OF reportTrigger  reportTrigger SEQUENCE {  aperiodic SEQUENCE {  -- The CSI-ReportConfig associated with this reportTrigger  associatedReportConfigs SEQUENCE (SIZE (1..maxNrofReportConfigIdsPerTrigger)) OF associatedReportConfig  associatedReportConfig SEQUENCE{  csi-ResourceConfigId CSI-ResourceConfigId,  associatedResourceConfigs SEQUENCE(SIZE (1..3)) OF associatedResourceConfig  associatedResourceConfig SEQUENCE{  csi-ResourceConfigId CSI-ResourceConfigId,  --bitmap with the bitwidth Nbit =number of resource sets (max number Nbit =16)  --in a linked resource setting per report trigger state.  -- Number of one(s) in the bitmap None = 1 for CSI acquisition and beam management  AssociatedResourceset BIT STRING (SIZE (16))    -- For a trigger state within aperiodicReportTrigger that triggers a ap-CSI-RS  --resource set, contains a list of  -- references to TCI-RS-SetConfig's in TCI-States for providing the QCL source and  --QCL type for each ap-CSI-RS  -- resource within the triggered set of ap-CSI-RS resources. The length of the  --list is equal to the number of  -- aperiodic CSI-RS resources in the set (CSI-RS-ResourceSet). For a target  --aperiodic CSI-RS assoicated with each  -- triggering state, contains a reference to one TCI-RS-Set in TCI-States for  --providing the QCL source and QCL type.  -- Corresponds to L1 parameter 'QCL-Info-aPeriodicReportingTrigger' (see 38.214, section FFS\_Section)  qcl-Info-aPeriodicReportingTrigger SEQUENCE (SIZE(1..ffsValue)) OF TCI-RS-SetId OPTIONAL  -- Offset X between the slot containing the DCI that triggers a set of aperiodic --NZP CSI-RS resources and the slot in which the  -- CSI-RS resource set is transmitted. When the field is absent the UE applies  --the value 0.  aperiodicTriggeringOffset FFS\_Value OPTIONAL  }    }  ~~-- The CSI-ReportCongig (their IDs) assocaited with this reportTrigger~~  ~~associatedReportConfigs SEQUENCE (SIZE (1..maxNrofReportConfigIdsPerTrigger)) OF CSI-ReportConfigId,~~  ~~-- bitmap with the bitwidth Nbit =number of resource sets (max number Nbit = 64) in a linked resource setting per report trigger tate.~~  ~~-- Number of one(s) in the bitmap None = 1 for CSI acquisition (FFS 1<= None <= 64 for beam management).~~  ~~-- FFS: To enforce the number of linked resources, the linking information should instead be in the report that uses the resource~~  ~~-- Corresponds to L1 parameter 'ResourceSetBitmap' (see 38.214, section FFS\_Section)~~  ~~-- FFS\_FIXME: The following list assumes that all NZP- and IM resource sets use a common ID space. But that is not ensured~~  ~~-- due to having separate lists of sets.~~  ~~associatedResourceSets SEQUENCE (SIZE (1..64)) OF CSI-ResourceSetId OPTIONAL,~~  ~~-- For a trigger state within aperiodicReportTrigger that triggers a ap-CSI-RS resource set, contains a list of~~  ~~-- references to TCI-RS-SetConfig's in TCI-States for providing the QCL source and QCL type for each ap-CSI-RS~~  ~~-- resource within the triggered set of ap-CSI-RS resources. The length of the list is equal to the number of~~  ~~-- aperiodic CSI-RS resources in the set (CSI-RS-ResourceSet). For a target aperiodic CSI-RS assoicated with each~~  ~~-- triggering state, contains a reference to one TCI-RS-Set in TCI-States for providing the QCL source and QCL type.~~  ~~-- Corresponds to L1 parameter 'QCL-Info-aPeriodicReportingTrigger' (see 38.214, section FFS\_Section)~~  ~~qcl-Info-aPeriodicReportingTrigger SEQUENCE (SIZE(1..ffsValue)) OF TCI-RS-SetId~~  OPTIONAL  },  semiPersistentOnPUSCH SEQUENCE {  associatedReportConfig CSI-ReportConfigId  }  } |  |
| Z020 | Per RAN1’s input, the value of the semiPersistentOnPUSCH is a  list of up to 2^ reportTriggerSize CSI-ReportConfigId values. | 2 | semiPersistentOnPUSCH SEQUENCE ~~{~~SIZE (1..maxNrofCSI-ReportConfigIDs))  ~~associatedReportConfig~~ CSI-ReportConfigId  ~~}~~ |  |
| Z021 | The preambleReceivedTargetPower for beam failure recovery has the same value range as IA. So it’s better to define a PreambleReceivedTargetPower structure which can be referred by the IA and BFR | 2 | -- Use of PRACH or/and PUSCH for beam in some combination, details FFS.  -- FFS\_CHECK: Can be removed since beam recovery is only supported with RA?!  linkReconfigurationRequest FFS\_Value OPTIONAL,  -- A RACH configuration which the UE may uses for beam recovery upon beam failure detection  -- FFS: If this field is absent, the UE uses the RACH-ConfigCommon configuration appliable for this serving cell??  -- FFS: Compare with the parameters in RACH-ConfigCommon and try align/re-use.  rach-ConfigCommon SEQUENCE {  -- PRACH root sequence index for beam failure recovery  -- Corresponds to L1 parameter 'RootSequenceIndex-BFR' (see 38.211, section 6.3.3.1)  rootSequenceIndex INTEGER (0..137) OPTIONAL,    -- N-CS configuration for beam falure recovery, see Table 6.3.3.1-3 in 38.211  -- Corresponds to L1 parameter 'ZeroCorrelationZoneConfig-BFR' (see 38.211, section 6.3.3.1)  zeroCorrelationZoneConfig INTEGER (0..15) OPTIONAL,    -- Received target power for beam failure request for PRACH  -- Corresponds to L1 parameter 'PreambleInitialReceivedTargetPower-BFR' (see 38.213, section 7.4)  preambleReceivedTargetPower ~~FFS\_Value~~PreambleReceivedTargetPower OPTIONAL,    -- Maximum number of beam failure request transmissions  -- Corresponds to L1 parameter 'PreambleTransMax-BFR' (see 38.321?, section FFS\_Section)  preambleTransMax FFS\_Value OPTIONAL,    -- Power ramping steps for beam failure request via PRACH  -- Corresponds to L1 parameter 'powerRampingStep-BFR' (see 38.321?, section FFS\_Section)  powerRampingStep ENUMERATED {dB0, dB2,dB4, dB6} OPTIONAL,  -- RAR-Response Window for beamfailure recovery  -- FFS\_Value: Use same value range as for normal RAR window?!  -- Corresponds to L1 parameter 'Beam-failure-recovery-request-window' (see 38.213, section 6)  beamFailureRecoveryRequestWindow ENUMERATED {ffsTypeAndValue} OPTIONAL  },  PreambleReceivedTargetPower ::= ENUMERATED {  dBm-120, dBm-118, dBm-116, dBm-114, dBm-112, dBm-110, dBm-108, dBm-106, dBm-104, dBm-102, dBm-100,  dBm-98, dBm-96, dBm-94,dBm-92, dBm-90, dBm-88, dBm-86, dBm-84,dBm-82, dBm-80, dBm-78, dBm-76,  dBm-74, dBm-72, dBm-70, dBm-68, dBm-66, dBm-64, dBm-62, dBm-60, dBm-58, dBm-56, dBm-54, dBm-52, dBm-50, dBm-48, dBm-46, dBm-44, dBm-42, dBm-40, dBm-38, dBm-36, dBm-34, dBm-32, dBm-30, dBm-28, dBm-26, dBm-24, dBm-22, dBm-20, dBm-18, dBm-16, dBm-14, dBm-12, dBm-10, dBm-8, dBm-6, dBm-4, dBm-2, dBm-0, dBm2, dBm4, dBm6 } OPTIONAL, |  |
| Z022 | In RAN1’s specification 38.213, beam failure related procedure is described as link reconfiguration. Besides,’BeamManagement’ is quite a general terminology. So from these point of view, it’s better to align the terminology between RAN2 and RAN1. For instance, ’BeamManagement’ can be revised as ‘LinkReconfiguration’.  Lots of the IEs are indicated as OPTIONAL, it should be clarified the actual meaning when the IEs are absent.  Per RAN1’ latest input, the preambleTransMax has the same value range as for IA. | 2 | ’BeamManagement’ can be revised as ‘LinkReconfiguration’ to align with the terminology with RAN1.  All the OPTIONAL IEs should be clarified the meaning when they are absent.  ~~BeamManagement~~LinkReconfiguration ::= SEQUENCE {  .....  }  preambleTransMax ~~FFS\_Value~~ENUMERATED {n3, n4, n5, n6, n7, n8, n10, n20, n50, n100, n200}, |  |
| Z023 | Per RAN1’s agreement, beam recovery can only be achieved via RA, so the linkReconfigurationRequest can be deleted | 2 | ~~-- Use of PRACH or/and PUSCH for beam in some combination, details FFS.~~  ~~-- FFS\_CHECK: Can be removed since beam recovery is only supported with RA?!~~  ~~linkReconfigurationRequest FFS\_Value OPTIONAL,~~ |  |

#### – FailureReportSCGtoOtherRAT

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#### – FrequencyInfoDL

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#### – FrequencyInfoUL

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#### – LogicalChannelConfig

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z025 | ul-SpecificParametersSEQUENCE {  ....  } OPTIONAL-- Cond UL.  Considering the use of default value for SRB, the ul-SpecificParameters should be optional for SRB. | 2 | ul-SpecificParameters SEQUENCE {  ....  }OPTIONAL-- Cond UL  Conditional Presence Explanation  UL The field is mandatory present for a logical channel with uplink for DRB, optional present for SRB, and not present for the other cases (i.e. DRB with DL only).~~, otherwise it is not present..~~ For SRB, the absence~~t~~ of this IE means the default values defined in section 9.2.1 should be used. |  |
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| Z027 | “lcp-configuredGrantType1Allowed” (whether a Configured Grant Type 1 can be used for transmission;) is missing in the ASN.1 | 2 | Add the “lcp-configuredGrantType1Allowed” based on the description in 38.321 |  |
| Z028 | “lcp-allowedServingCells” (the allowed cell(s) for transmission) is missing in the ASN.1 | 2 | Add the “lcp-allowedServingCells” based on the description in 38.321 |  |
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#### – MAC-CellGroupConfig

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| Z031 | Since the DRX-Config has a release branch within it, the need code for DRX-Config should be Need M instead Need R. | 2 | MAC-CellGroupConfig ::= SEQUENCE {  drx-Config DRX-Config OPTIONAL, -- Need M~~R~~  schedulingRequestConfig SchedulingRequestConfig OPTIONAL,  bsr-Config BSR-Configuration OPTIONAL, -- Need N  tag-Config TAG-Configuration OPTIONAL, -- Need N  phr-Config PHR-Config OPTIONAL, -- Need N  sCellDeactivationTimer ENUMERATED {  ms20, ms40, ms80, ms160, ms200, ms240, ms320, ms400, ms480, ms520, ms640, ms720, ms840, ms1280, spare2,  spare1} OPTIONAL, -- Cond ServingCellWithoutPUCCH  -- FFS : configurable per SCell?  skipUplinkTxDynamic BOOLEAN  } |  |
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#### – MeasConfig

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#### – MeasId

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#### – MeasIdToAddModList

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#### – MeasObjectEUTRA

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#### – MeasObjectId

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### – MeasObjectNR

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z034 | The description of csi-rs-measurementBW should only contain the start PRB and number of PRBs?? It is a bit unclear why the other parameters are included. These should be deleted from the csi-rs-measurementBW.  According to RAN1 L1 parameter description, the associated-SSB and QCLed-SSB can be configured per CSI-RS resource, so these two parameters should be removed into CSI-RS-Resource-Mobility.  Per agreement at RAN2#100: In case that more than one MO with CSI-RS resources for measurement is associated to the same SSB location in frequency the UE is indicated which MO corresponds to the serving carrier. So the isServingCellMO should be removed out of the csi-rs-MeasurementBW to form a separate IE in the CSI-RS-ResourceConfig-Mobility.  Also, per RAN1’s input the IE should be optional | 2 | CSI-RS-ResourceConfig-Mobility ::= SEQUENCE {  -- MO specific values  csi-rs-MeasurementBW SEQUENCE {  -- Size of the measurement BW in PRBs  -- Corresponds to L1 parameter 'CSI-RS-measurementBW-size' (see FFS\_Spec, section FFS\_Section)  nrofPRBs ENUMERATED { size24, size48, size96, size192, size268},  -- Starting PRB index of the measurement bandwidth  -- Corresponds to L1 parameter 'CSI-RS-measurement-BW-start' (see FFS\_Spec, section FFS\_Section)  -- FFS\_Value: Upper edge of value range unclear in RAN1  startPRB INTEGER(0..251),  ~~-- Each CSI-RS resource may be associated with one SSB. If such SSB is indicated, the NW also indicates whether the UE may assume~~  ~~-- quasi-colocation of this SSB with this CSI-RS reosurce.~~  ~~-- Corresponds to L1 parameter 'Associated-SSB' (see FFS\_Spec, section FFS\_Section)~~  ~~-- FFS: What does the UE do if it there is no such SSB-Index?~~  ~~associatedSSB SEQUENCE {~~  ~~-- FFS\_Value: Check the value range~~  ~~ssb-Index SSB-Index OPTIONAL,~~  ~~-- The CSI-RS resource is either QCL’ed not QCL’ed with the associated SSB in spatial parameters~~  ~~-- Corresponds to L1 parameter 'QCLed-SSB' (see FFS\_Spec, section FFS\_Section)~~  ~~isQuasiColocated BOOLEAN~~  ~~},~~  ~~isServingCellMO BOOLEAN~~  },  -- subcarrier spacing of CSI-RS. It can take the same values available also for the data channels and for SSB  subcarrierSpacing SubcarrierSpacing,  -- FFS\_Description.  -- FFS\_CHECK: Should this be in the resource-config (here) or in the resource (below)?  -- Corresponds to L1 parameter 'Common-PRB-Grid-offset' (see FFS\_Spec, section FFS\_Section)  prb-GridOffset INTEGER (maxNrofPhysicalResourceBlocksTimes4)  OPTIONAL,  isServingCellMO BOOLEAN  -- List of resources  csi-rs-ResourceList-Mobility SEQUENCE (SIZE (1..maxNrofCSI-RS-ResourcesRRM)) OF CSI-RS-Resource-Mobility  }  CSI-RS-Resource-Mobility ::= SEQUENCE {  csi-rs-ResourceId-RRM CSI-RS-ResourceId-RRM,  cellId PhysicalCellId,  -- FFS\_CHECK whether the following fields are supposed to be per resource (here) or in the resource config (above)  -- Contains periodicity and slot offset for periodic/semi-persistent CSI-RS (see 38.211, section x.x.x.x)FFS\_Ref  slotConfig CHOICE {  ms5 INTEGER (0..4),  ms10 INTEGER (0..9),  ms20 INTEGER (0..19),  ms40 INTEGER (0..39)  },  -- Resource Element mapping pattern for CSI-RS (see 38.211, section x.x.x.x) FFS\_Ref  resourceElementMappingPattern ENUMERATED {ffsTypeAndValue},  -- Sequence generation parameter for CSI-RS (see 38.211, section x.x.x.x) FFS\_Ref  sequenceGenerationConfig INTEGER (0..1023),  -- Frequency domain density for the 1-port CSI-RS for L3 mobility  -- Corresponds to L1 parameter 'Density' (see FFS\_Spec, section FFS\_Section)  density ENUMERATED {d1,d3} OPTIONAL,  -- Each CSI-RS resource may be associated with one SSB. If such SSB is indicated, the NW also indicates whether the UE may assume  -- quasi-colocation of this SSB with this CSI-RS reosurce.  -- Corresponds to L1 parameter 'Associated-SSB' (see FFS\_Spec, section FFS\_Section)  -- FFS: What does the UE do if it there is no such SSB-Index?  associatedSSB SEQUENCE {  -- FFS\_Value: Check the value range  ssb-Index SSB-Index OPTIONAL,  -- The CSI-RS resource is either QCL’ed not QCL’ed with the associated SSB in spatial parameters  -- Corresponds to L1 parameter 'QCLed-SSB' (see FFS\_Spec, section FFS\_Section)  isQuasiColocated BOOLEAN  }, OPTIONAL  ...  } |  |
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| Z036 | Per the latest RAN1 input, the value range of the sub-carrier spacing for CSI-RS is {15kHz,30kHz,60kHz} for sub6, {60kHz,120kHz,240kHz} for over6. However, the value of the subcarrierSpacing in the CSI-RS-ResourceConfig-Mobility is now referred to a common structure SubcarrierSpacing with the value range of {15kHz,30kHz} for sub6, {60kHz,120kHz} for over6. | 2 | Like SubcarrierSpacingSSB, a new IE subcarrierSpacingCsiRs is defined for CSI-RS. The value of the subcarrierSpacingCsiRs is SubcarrierSpacingCSIRS which is defined in the *SubcarrierSpacing* information element.  CSI-RS-ResourceConfig-Mobility ::= SEQUENCE {  -- MO specific values  csi-rs-MeasurementBW SEQUENCE {  -- Size of the measurement BW in PRBs  -- Corresponds to L1 parameter 'CSI-RS-measurementBW-size' (see FFS\_Spec, section FFS\_Section)  nrofPRBs ENUMERATED { size24, size48, size96, size192, size268},  -- Starting PRB index of the measurement bandwidth  -- Corresponds to L1 parameter 'CSI-RS-measurement-BW-start' (see FFS\_Spec, section FFS\_Section)  -- FFS\_Value: Upper edge of value range unclear in RAN1  startPRB INTEGER(0..251),  -- Each CSI-RS resource may be associated with one SSB. If such SSB is indicated, the NW also indicates whether the UE may assume  -- quasi-colocation of this SSB with this CSI-RS reosurce.  -- Corresponds to L1 parameter 'Associated-SSB' (see FFS\_Spec, section FFS\_Section)  -- FFS: What does the UE do if it there is no such SSB-Index?  associatedSSB SEQUENCE {  -- FFS\_Value: Check the value range  ssb-Index SSB-Index OPTIONAL,  -- The CSI-RS resource is either QCL’ed not QCL’ed with the associated SSB in spatial parameters  -- Corresponds to L1 parameter 'QCLed-SSB' (see FFS\_Spec, section FFS\_Section)  isQuasiColocated BOOLEAN  },  isServingCellMO BOOLEAN  },  -- subcarrier spacing of CSI-RS. It can take the same values available also for the data channels and for SSB  subcarrierSpacingCsiRs SubcarrierSpacingCSIRS,  -- FFS\_Description.  -- FFS\_CHECK: Should this be in the resource-config (here) or in the resource (below)?  -- Corresponds to L1 parameter 'Common-PRB-Grid-offset' (see FFS\_Spec, section FFS\_Section)  prb-GridOffset INTEGER (maxNrofPhysicalResourceBlocksTimes4) OPTIONAL,  -- List of resources  csi-rs-ResourceList-Mobility SEQUENCE (SIZE (1..maxNrofCSI-RS-ResourcesRRM)) OF CSI-RS-Resource-Mobility  } |  |
| Z037 | The subcarrierSpacing for SSB (when SSB is present) should refer to the value range structure subcarrierSpacingSSB instead of the common subcarrierSpacing. | 2 | ReferenceSignalConfig::= SEQUENCE {  ssb-MeasurementTimingConfiguration SSB-MeasurementTimingConfiguration OPTIONAL,  ssbPresence CHOICE {  present SEQUENCE {  frequencyOffset ENUMERATED {ffsTypeAndValue},  subcarrierSpacing SubcarrierSpacingSSB  },  notPresent SEQUENCE {  -- FFS: How to inform the UE where else to find the SSB. FFS whether to indicate here a carrier or a cell ID or multiple cell IDs  }  }, |  |
| Z038 | RAN4 has defined the NR-ARFCN range as [0.. 3279167]. So the ARFCN-ValueEUTRA should be defined as an integer in the range [0.. 3279167] instead of a ENUMERATED type. | 2 | ARFCN-ValueNR ::= ~~ENUMERATED~~INTEGER {~~ffsTypeAndValue~~0..3279167} |  |
| Z039 | The offsetFreq can be applied to event A3/A4/A5, i.e. used in the Entering condition/leaving condition of A3/A4/A5 event. So the restriction of only for events A3,A6 is not correct. The restriction can be deleted or if keeping it, it should be revised to A3,A4, and A5. | 2 | --Frequency-specific offsets ~~(only for events A3, A6)~~  offsetFreq Q-OffsetRangeList, |  |
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| Z041 | According to the latest RAN1 Reno agreement, for the slotConfig in CSI-RS-Resource-Mobility, the parameter description has been revised as :“Periodicity: {5, 10, 20, 40} msec ; Offset: 0, 1, …, P-1 slots, where periodicity P is in terms of slots in the CSI-RS numerology”, so the value range of slotoffset could be various upon different SCS, and RAN1 confirms the slotConfig is configured per resources.  However, since the SCS is configured in CSI-RS-ResourceConfig-Mobility, and applies for all CSI-RS resources, so we suggest to give the maximum value range of each periodicity with more detail IE descriptions. | 2 | CSI-RS-Resource-Mobility ::= SEQUENCE {  csi-rs-ResourceId-RRM CSI-RS-ResourceId-RRM,  cellId PhysicalCellId,  ~~-- FFS\_CHECK whether the following fields are supposed to be per resource (here) or in the resource config (above)~~  -- Contains periodicity and slot offset for periodic/semi-persistent CSI-RS (see 38.211, section x.x.x.x)FFS\_Ref  -- When SubcarrierSpacingCsiRs is set to 15kHZ, the maximum value for periodicities ms5/ms10/ms20/ms40 are 4/9/19/39; When SubcarrierSpacingCsiRs is set to 30kHZ, the maximum value for periodicities ms5/ms10/ms20/ms40 are 9/19/39/79; When SubcarrierSpacingCsiRs is set to 60kHZ, the maximum value for periodicities ms5/ms10/ms20/ms40 are 19/39/79/159; When SubcarrierSpacingCsiRs is set 120kHZ, the maximum value for periodicities ms5/ms10/ms20/ms40 are 39/79/159/319; When SubcarrierSpacingCsiRs is set 240kHZ, the maximum value for periodicities ms5/ms10/ms20/ms40 are 79/159/319/639;  slotConfig CHOICE {  ms5 INTEGER (0..~~4~~79),  ms10 INTEGER (0..~~9~~159),  ms20 INTEGER (0..~~19~~319),  ms40 INTEGER (0..~~39~~639),  },  -- Resource Element mapping pattern for CSI-RS (see 38.211, section x.x.x.x) FFS\_Ref  resourceElementMappingPattern ENUMERATED {ffsTypeAndValue},  -- Sequence generation parameter for CSI-RS (see 38.211, section x.x.x.x) FFS\_Ref  sequenceGenerationConfig INTEGER (0..1023),  -- Frequency domain density for the 1-port CSI-RS for L3 mobility  -- Corresponds to L1 parameter 'Density' (see FFS\_Spec, section FFS\_Section)  density ENUMERATED {d1,d3} OPTIONAL,  ...  } |  |

#### – MeasObjectToAddModList

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### – MeasResults

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### – PDCCH-Config

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#### – PDCP-Config

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z044 | The uplinkOnlyROHC should be either OPTIONAL.or a choice. | 2 | drb SEQUENCE {  discardTimer ENUMERATED {ms10, ms20, ms30, ms40, ms50, ms60, ms75, ms100, ms150, ms200, ms250, ms300, ms500, ms750, ms1500, infinity} OPTIONAL, -- Cond Setup  pdcp-SN-Size-UL ENUMERATED {len12bits, len18bits},  pdcp-SN-Size-DL ENUMERATED {len12bits, len18bits},  headerCompression CHOICE {  notUsed NULL,  rohc SEQUENCE {  maxCID INTEGER (1..16383) DEFAULT 15,  profiles SEQUENCE {  profile0x0001 BOOLEAN,  profile0x0002 BOOLEAN,  profile0x0003 BOOLEAN,  profile0x0004 BOOLEAN,  profile0x0006 BOOLEAN,  profile0x0101 BOOLEAN,  profile0x0102 BOOLEAN,  profile0x0103 BOOLEAN,  profile0x0104 BOOLEAN  }~~,~~  },  uplinkOnlyROHC SEQUENCE {  maxCID INTEGER (1..16383) DEFAULT 15,  profiles SEQUENCE {  profile0x0006 BOOLEAN  }  },  ...  }  },  integrityProtection BOOLEAN,  statusReportRequired BOOLEAN OPTIONAL -- Cond Rlc-AM  } |  |
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| Z046 | CellGroupId ::= INTEGER (1.. maxSCellGroups)  In order to indicate MCG, the range of CellGroupId should be revised to INTEGER (0.. maxSCellGroups) | 2 | moreThanOneRLC SEQUENCE {  primaryPath SEQUENCE {  cellGroup CellGroupId  logicalChannel LogicalChannelIdentity  },  ul-DataSplitThreshold CHOICE {  release NULL,  setup ENUMERATED {  b0, b100, b200, b400, b800, b1600, b3200, b6400, b12800, b25600, b51200, b102400, b204800,  b409600, b819200, b1228800, b1638400, b2457600, b3276800, b4096000, b4915200, b5734400,  b6553600, infinity, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1}  },  ul-Duplication BOOLEAN  } |  |
| Z047 | The IE moreThanOneRLC should support both the CA based duplication and DC based duplication.The ul-DataSplitThreshold and ul-Duplication within “moreThanOneRLC” are only applicable for DC case, and should be marked as optional or grouped into a choice. | 2 | moreThanOneRLC CHOICE ~~SEQUENCE~~ {  dual-connectivity SEQUENCE {  primaryPath SEQUENCE {  cellGroup CellGroupId,  logicalChannel LogicalChannelIdentity  },  ul-DataSplitThreshold CHOICE {  release NULL,  setup ENUMERATED { b0, b100, b200, b400, b800, b1600, b3200, b6400, b12800, b25600, b51200, b102400, b204800, b409600, b819200, b1228800, b1638400, b2457600, b3276800, b4096000, b4915200, b5734400, b6553600, infinity, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1}  },  ul-Duplication BOOLEAN  },  ca-duplication SEQUENCE {  logicalChannel LogicalChannelIdentity  }  } |  |
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#### – PDSCH-Config

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z048 | Based on the description in 38.214, We suggest to rename TCI-RS-Set to TCI-State, and the TCI-RS-SetId should be renamed to TCI-StateId accordingly, because even more than one RS sets within one TCI-State has been down prioritized in RAN decision, it might be supported in the future. And we add the parent IE “tci-RS-SetConfig” which described in 38.214. | 2 | PDSCH-Config ::= SEQUENCE {  ... ...  -- Contains Transmission Configuration Indicator (TCI) states for dynamically indicating (over DCI) a transmission configuration  -- which includes QCL-relationships between the DL RSs in one RS set and the PDSCH DMRS ports  -- (see 38.214, section 5.1.4)  tci-States SEQUENCE (SIZE(1..~~maxNrof-TCI-RS-Sets~~maxNrof-TCI-RS-States)) OF TCI-~~RS-Set~~State,  ...  }  -- Associates one or two DL reference signals with a corresponding quasi-colocation (QCL) type.  -- FFS: Rename TCI-RS-Set to TCI-State? Would feel more in line with the name of the list: tci-States.  TCI-~~RS-Set~~State ::= SEQUENCE {  tci-RS-~~Set~~StateId TCI-RS-~~Set~~StateId,  tci-RS-SetConfig SEQUENCE {  -- For a specific tci-RS-SetConfig, the qcl-Types corresponding to the selected reference RS within one TCI-RS-Set shall not be the same.  qcl-Type1 SEQUENCE {  referenceSignal CHOICE {  csi-rs NZP-CSI-RS-ResourceConfigId,  ssb SSB-Id,  -- A TRS (Tracking Reference Signal) configuration represented as a set of CSI-RS-Resources in a CSI-ResourceSetId  trs CSI-ResourceSetId  },  qcl-Type ENUMERATED {typeA, typeB, typeC, typeD}  },  qcl-Type2 SEQUENCE {  referenceSignal CHOICE {  csi-rs NZP-CSI-RS-ResourceConfigId,  ssb SSB-Id,  -- A TRS (Tracking Reference Signal) configuration represented as a set of CSI-RS-Resources in a CSI-ResourceSetId  trs CSI-ResourceSetId  },  qcl-Type ENUMERATED {typeA, typeB, typeC, typeD}  } OPTIONAL  }  }  TCI-RS-~~Set~~StateId ::= INTEGER (0..ffsValue) |  |
| Z049 | Multiple DMRS groups has been down prioritized by RAN, currently only one group is used in RAN1 , and all assigned DM-RS port via DM-RS group indicator in DCI belong to single group, so we suggest to delete these parameters in current version. | 2 | PDSCH-Config ::= SEQUENCE {  -- Indicates whether to use code-block-group (CBG) based transmission (see 38.213, section x.x.x.x) FFS\_Ref  -- FFS: Is this BOOLEAN parameter needed or can it be derived from the presence of the codeBlockGroupsPerTransportBlock?  codeBlockGroupTransmission BOOLEAN,  -- Maximum number of code-block-groups (CBGs) per TB. In case of multiple CW the maximum CBG is 4 (see 38.213, section 9.1.1)  maxCodeBlockGroupsPerTransportBlock ENUMERATED {n2, n4, n6, n8},  -- Indicates whether CBGFI for CBG based (re)transmission in DL is enabled (true). (see FFS\_Specification, section FFS\_Section)  codeBlockGroupFlushIndicator BOOLEAN,  dmrs-Downlink SEQUENCE {  -- Selection of the DMRS type to be used for DL (see 38.211, section 7.4.1.1.1)  dmrs-Type ENUMERATED {type1, type2} OPTIONAL, -- Need R  -- Position for additional DM-RS in DL, see Table 7.4.1.1.2-4 in 38.211.  -- The four values represent the cases of 1+0, 1+1, 1+1+1. 1+1+1+1 non-adjacent OFDM symbols for DL.  -- CHECK: Listed in RAN1 table. But should this really be in dedicated signalling?  dmrs-AdditionalPosition ENUMERATED {pos0, pos1, pos2, pos3} OPTIONAL, -- Need R  ~~-- DM-RS groups that are QCL:ed, i.e. group 1 (see 38.214, section 5.1)~~  ~~-- FFS CHECK: Clarify how to configure the DMRS groups and the relation to TCI.~~  ~~-- FFS\_Value: Check whether these are really meant to be these few intergers~~  ~~dmrs-group1 INTEGER (1000..1011),~~  ~~-- DM-RS groups that are QCL:ed, i.e. group 2 (see 38.214, section 5.1)~~  ~~-- FFS\_Value: Check whether these are really meant to be these few intergers~~  ~~dmrs-group2 INTEGER (1000..1012),~~  -- The maximum number of OFDM symbols for DL front loaded DMRS  -- Corresponds to L1 parameter 'DL-DMRS-max-len' (see 38.214, section 5.1)  maxLength ENUMERATED {len1, len2},  -- DL DMRS scrambling initalization  -- Corresponds to L1 parameter 'DL-DMRS-Scrambling-ID' (see 38.214, section 5.1)  -- When the field is absent the UE applies the value "Physical cell ID + 6 fixed bits (e.g. 000000)"  -- FFS: Clarify default value: Are the 6 bits zeros (says e.g.). Are they the MSBs or LSBs?  -- FFS\_CHECK: Is it really 16 bit whereas all other scrambling IDs are just 10 bit? If this is also 10, replace by type ScramblingId  scramblingID BIT STRING (SIZE (16)) OPTIONAL  }, |  |
| Z050 | The value range of frequencyDomainAllocation in RAN1 L1 excel is “Starting subcarrier:  X = 1 port: no restriction  Y = 2: constrained to be one among even subcarriers in an RB  Y = 4: constrained to be one among subcarriers 0, 4, 8 in an RB”, it didn’t mean to use bitmap in ASN.1,, so we sugget to use the same coding method as firstOFDMSymbolTimeDomain. | 2 | -- OFDM symbol and subcarrier occupancy of the ZP-CSI-RS resource within a slot  -- Corresponds to L1 parameter 'ZP-CSI-RS-ResourceMapping' (see 38.214, section FFS\_Section)  resourceMapping SEQUENCE {  -- Frequency domain allocation within a physical resource block in accordance with 38.211, table 7.4.1.5.2-1. FFS: Table correct?  -- The number of bits that may be set to one depend on the chosen row in that table.  frequencyDomainAllocation CHOICE {  row1 ~~BIT STRING (SIZE (4))~~INTEGER (0..15),  row2 ~~BIT STRING (SIZE (12))~~INTEGER (0..4095),  row4 ~~BIT STRING (SIZE (3))~~INTEGER (0..7),  other ~~BIT STRING (SIZE (6))~~INTEGER (0..63)  },  -- Time domain allocation within a physical resource block. The field indicates the first OFDM symbol in the PRB used for CSI-RS.  firstOFDMSymbolInTimeDomain INTEGER (0..13)  } |  |
| Z082 | The TCI-RS-Set can support up to 128 relevant RS configurations, from RAN1’s point of view, RRC should support delta configuration; (e.g: initially, the network configures 10 sets of configurations via RRCReconfiguration, while later, the network wants to modify the configuration with ID=5, but without including all the configurations).  In addition, considering the associated CSI-RS resources may be updated by RRC signaling, the IE structure should be revised as “toAddModList” and “toReleaseList”. | 2 | In order to enable the delta signalling, an add/mod/release list should be used instead for the TCI-RS-Set |  |

#### – PhysCellId

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#### – PUCCH-Config

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z083 | for *spatialRelationInfo* in PUCCH config, considering the associated CSI-RS or SRS resources may be modified by RRC signalling, we should modify the IE structure of spatialRelationInfo into “toAddModList” and “toReleaseList”.  (In current 331, there is another spatialRelationInfo in SRS configuration, but our understanding is that it is different with this one, and we only need to modify this one) | 2 | Modify the spatialRelationInfo to a *toAddModList* and add the *toReleaseList* to enable delta signalling |  |
| Z084 | the maxNrofPUCCH-PathlossReferenceRS equals 4. For pathlossReferenceRSs, it can configured up to 4 PUCCH-PathlossReference-RS, but, this can be used in PUCCH power control, and our understanding is that there are scenarios to modify one of them. so the IE structure should be revised to “toAddModList” and “toReleaseList”.  Meanwhile, the entire structure of PUCCH-PowerControl should be modified to “toAddModList” and “toReleaseList” as well. | 2 | Modify the PUCCH-PowerControl to a *toAddModList* and add the *toReleaseList* to enable delta signalling |  |
| Z086 | According to RAN1 spec 38.211 section 6.3.2.2.1, the “sequenceHoppingId” is used in both group hopping and sequence hopping, so the IE name should be revised as “sequenceGroupId” to avoid misunderstanding. | 2 | PUCCH-ConfigCommon ::= SEQUENCE {  -- PUCCH resource configuration for HARQ-ACK before RRC connection setup  -- Corresponds to L1 parameter 'PUCCH-resource-common' (see 38.213, section 9.2)  -- FFS\_Value: RAN1 to provide more details on the value range  pucch-ResourceCommon BIT STRING (SIZE (4)) OPTIONAL,  -- Enables hopping of base sequence of PUCCH Format 0 when transmitted in different slots.  -- Corresponds to L1 parameter 'PUCCH-F0-Base-sequence-hopping' (see 38.211, section 6.4.1.3)  pucch-Format0-BaseSequenceHopping ENUMERATED {true} OPTIONAL,  -- Enabling hopping of base sequence of PUCCH Format 1 when transmitted in different slots  -- Corresponds to L1 parameter 'PUCCH-F1-Base-sequence-hopping' (see 38.211, section 6.4.1.3)  pucch-Format1-BaseSequenceHopping ENUMERATED {true} OPTIONAL,  -- Cell-Specific scrambling ID for Group hoppping and sequence hopping if enabled.  -- Corresponds to L1 parameter 'ScramblingID' (see 38.211, section ~~6.4.1.3~~6.3.2.2.1)  sequence~~Hopping~~GroupId BIT STRING (SIZE (10)) OPTIONAL, |  |

#### – PUSCH-Config

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z051 | In our view, RAN1 has not agreed to introduce a cel-specific parameter to enable/disable the sequence group hopping for UE, and it has already been supported via the UE specific parameter: Disable-sequence-group-hopping-Transform-precoding, so we suggest to delete the groupHoppingEnabledTransformPrecoding from PUSCH-ConfigCommon. | 2 | PUSCH-ConfigCommon ::= SEQUENCE {  ~~-- Sequence-group hopping can be enabled or disabled by means of this cell-specific parameter.~~  ~~-- Corresponds to L1 parameter 'Group-hopping-enabled-Transform-precoding' (see 38.211, section FFS\_Section)~~  ~~-- This field is Cell specific~~  ~~groupHoppingEnabledTransformPrecoding ENUMERATED {enabled} OPTIONAL,~~  -- ------------------------  -- Power control parameters  -- Power offset between msg3 and RACH preamble transmission. Corresponds to L1 parameter 'Delta-preamble-msg3' (see 38.213, section 7.1)  msg3-DeltaPreamble FFS\_Value OPTIONAL,  -- P0 value for PUSCH with grant (except msg3). Value in dBm. Only even values (step size 2) allowed.  -- Corresponds to L1 parameter 'p0-nominal-pusch-withgrant' (see 38.213, section 7.1)  -- This field is cell specific  p0-NominalWithGrant INTEGER (-202..24) OPTIONAL,  ...  } |  |
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| Z085 | similar with PUCCH (see Z083 and Z084), both PUSCH-PathlossReference-RS and the entire PUSCH-PowerControl should be modified into “toAddModList” and “toReleaseList”, in order to support delta configuration. | 2 | Modify both PUSCH-PathlossReference-RS and the PUSCH-PowerControl to use the “toAddModList” and “toReleaseList” to enable delta configuration. |  |

#### – Q-OffsetRange

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### – QuantityConfig

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z053 | Typo? The first IE could be renamed as quantityConfigEUTRA for inter-RAT measurement. | 2 | QuantityConfig ::= SEQUENCE {  quantityConfig~~NR~~EUTRA QuantityConfig~~NR~~EUTRA OPTIONAL,  quantityConfigNR-list QuantityConfigNR-List OPTIONAL  }  QuantityConfigEUTRA ::= SEQUENCE{ffsTypeAndValue} |  |
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#### – RACH-ConfigCommon

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#### – RACH-ConfigDedicated

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z054 | The cfra-csirs-Threshold should not be included in CFRA-Resources as a choice. Instead of that, the cfra-csirs-Threshold should be moved to RACH-ConfigDedicated. | 2 | RACH-ConfigDedicated ::= SEQUENCE {  -- Resources for handover to the cell  cfra-Resources CFRA-Resources,  -- The threshold used in the SSB/CSI-RS selection in CFRA procedure.  cfra-csirs-Threshold RSRP-Range  -- Subcarrier spacing for msg2 for contention-free RA procedure for handover  rar-SubcarrierSpacing SubcarrierSpacing  }  -- FFS\_CHECK: Isn't it sufficient to have just one list and the CHOICE inside the list element (around the ssb/csirs)?  CFRA-Resources ::= CHOICE {  cfra-ssb-ResourceList SEQUENCE (SIZE(1..maxRAssbResources)) OF CFRA-SSB-Resource,  cfra-csirs-ResourceList SEQUENCE (SIZE(1..maxRAcsirsResources)) OF CFRA-CSIRS-Resource  ~~cfra-csirs-Threshold RSRP-Range~~} |  |
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#### – RadioBearerConfig

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z055 | “srb-ToReleaseList” is not a list. Since only SRB 3 can be released, the “srb-ToReleaseList” can be replaced by “srb3-ToReleaseIndication” | 2 | srb3~~-ToReleaseList~~ToReleaseInd ENUMERATED{true}~~INTEGER (3)~~ OPTIONAL, -- Need ~~M~~N |  |
|  | The notes (“-- may only be set if the cell groups of all linked logical channels are reset or released”) and condition (““KeyChange The field is mandatory present in case of with key change, otherwise the field is not present””) for the IE “reestablishPDCP” seems not aligned.  Since only duplication is supported for split SRB, I guess the notes should be removed. In addition, the condition “KeyChange” indicate that the only case for the SRB PDCP reestablish is the key change, I guess if the condition is correct, then the IE is not needed. and we can simply capture this in text part. | 3 | SRB-ToAddMod ::= SEQUENCE {  srb-Identity SRB-Identity,  ~~-- may only be set if the cell groups of all linked logical channels are reset or released~~  ~~reestablishPDCP ENUMERATED{true} OPTIONAL, -- Cond KeyChange~~  pdcp-Config PDCP-Config OPTIONAL, -- Cond PDCP  ...  }  ~~Conditional Presence Explanation~~  ~~KeyChange The field is mandatory present in case of with key change, otherwise the field is not present~~ |  |
| Z056 | The description for the “-- Cond HO” for IE reestablishPDCP within DRB-ToAddMod is missing.  It’s not clear why we need this condition, and it seems it can be replaced by “Need N” directly.  Since the IE “reestablishPDCP” and “recoverPDCP” can not be set to ture simultaneously, we think it can be merged into one IE (e.g. pdcpBehaviour ENUMERATED(reestablish, recovery) OPTIONAL, --Need N). |  | DRB-ToAddMod ::= SEQUENCE {  cnAssociation CHOICE {  -- The EPS bearer ID determines the EPS bearer when NR connects to EPC using EN-DC  eps-BearerIdentity INTEGER (0..15), -- EPS-DRB-Setup  -- The SDAP configuration determines how to map QoS flows to DRBs when NR connects to the 5GC  sdap-Config SDAP-Config -- NGC  },  drb-Identity DRB-Identity,  -- may only be set if the cell groups of all linked logical channels are reset or released  reestablishPDCP ENUMERATED{true} OPTIONAL, -- ~~Cond HO~~Need N  recoverPDCP ENUMERATED{true} OPTIONAL, -- Need N  pdcp-Config PDCP-Config OPTIONAL, -- Cond PDCP  ...  } |  |
| Z057 | The “cnAssociation” should be optional (Need M), and it is not needed in case the “cnAssociation” is not changed.  CONDITIONAL | 2 | DRB-ToAddMod ::= SEQUENCE {  cnAssociation CHOICE {  -- The EPS bearer ID determines the EPS bearer when NR connects to EPC using EN-DC  eps-BearerIdentity INTEGER (0..15), -- EPS-DRB-Setup  -- The SDAP configuration determines how to map QoS flows to DRBs when NR connects to the 5GC  sdap-Config SDAP-Config -- NGC  } OPTIONAL, -- Need M  drb-Identity DRB-Identity,  -- may only be set if the cell groups of all linked logical channels are reset or released  reestablishPDCP ENUMERATED{true} OPTIONAL, -- Cond HO  recoverPDCP ENUMERATED{true} OPTIONAL, -- Need N  pdcp-Config PDCP-Config OPTIONAL, -- Cond PDCP  ...  } |  |
| Z058 | The “-- Cond PDCP” is used for IE pdcp-Config in both “SRB-ToAddMod” and “DRB-ToAddMod”, but the description for condition only mentioned the DRB part.  In addition, we think it will be more clear to revise the “reconfigured with NR PDCP” to “reconfigured from LTE PDCP to NR PDCP”. | 2 | SRB-ToAddMod ::= SEQUENCE {  srb-Identity SRB-Identity,  -- may only be set if the cell groups of all linked logical channels are reset or released  reestablishPDCP ENUMERATED{true} OPTIONAL, -- Cond KeyChange  pdcp-Config PDCP-Config OPTIONAL, -- Cond PDCP  ...  }  DRB-ToAddMod ::= SEQUENCE {  cnAssociation CHOICE {  -- The EPS bearer ID determines the EPS bearer when NR connects to EPC using EN-DC  eps-BearerIdentity INTEGER (0..15), -- EPS-DRB-Setup  -- The SDAP configuration determines how to map QoS flows to DRBs when NR connects to the 5GC  sdap-Config SDAP-Config -- NGC  },  drb-Identity DRB-Identity,  -- may only be set if the cell groups of all linked logical channels are reset or released  reestablishPDCP ENUMERATED{true} OPTIONAL, -- Cond HO  recoverPDCP ENUMERATED{true} OPTIONAL, -- Need N  pdcp-Config PDCP-Config OPTIONAL, -- Cond PDCP  ...  }  Conditional Presence Explanation  KeyChange The field is mandatory present in case of with key change, otherwise the field is not present  PDCP The field is mandatory present if the corresponding SRB or DRB is being setup or reconfigured ~~with~~ from LTE PDCP to NR PDCP; otherwise the field is optionally present, need M |  |

#### – ReportConfigId

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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#### – ReportConfigNR

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#### – ReportConfigToAddModList

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#### – RLC-Config

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#### – RLF-TimersAndConstants

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z062 | The RLM related L1 parameters have not been captured in current ASN.1 | 2 | Such as the following parameters in R1-1721581:  RLM-IS-OOS-thresholdConfig, RLM-RS, RLM-RS-List, RLM-SSB, RLM-CSIRS..etc |  |
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#### – SCellIndex

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#### – SchedulingRequest-Config

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#### – SchedulingRequestResource-Config

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#### – SDAP-Config

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z064 | mappedQoSflows SEQUENCE (SIZE (0..maxNrofQFIs)) OF QFI OPTIONAL, -- Need N  In order to enable the delta signalling, an add/mod/release list should be used instead. | 2 | In order to enable the delta signalling, an add/mod/release list should be used instead. |  |
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#### – SecurityAlgorithmConfig

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z065 | It is not necessary for the SN to provide this information (even in case the SRB3 is not established - note that IPC for DRB is not supported in EN-DC).  It seems the IE “integrityProtAlgorithm” can be optional, Need R. | 2 | SecurityAlgorithmConfig ::= SEQUENCE {  cipheringAlgorithm CipheringAlgorithm,  integrityProtAlgorithm IntegrityProtAlgorithm OPTIONAL, -- Need R  } |  |
| Z066 | Whether the modification of IE “keyToUse” can be supported without DRB addition/release in this release? And what’s the expected behaivour in X2 interface?  A paper will be prepared by ZTE on this aspect. | 4 | SecurityConfig ::= SEQUENCE {  securityAlgorithmConfig SecurityAlgorithmConfig OPTIONAL, -- Need M  keyToUse ENUMERATED{keNB, s-KgNB} OPTIONAL, -- Need M  ...  } |  |
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#### – ServCellIndex

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#### – ServingCellConfigCommon

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z067 | Spare values should be added in ssb-periodicityServingCell |  | ssb-periodicityServingCell ENUMERATED { ms5, ms10, ms20, ms40, ms80, ms160, spare2, spare1 } OPTIONAL, |  |
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#### – ServingCellConfigDedicated

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#### – SRB-Identity

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#### – SPS-Config

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#### – SRS-Config

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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| Z069 | 1. The value of carrierSwitching in SRS-Resource should be replaced by SRS-CarrierSwitching which defined below; 2. The relavant FFSs can be deleted; | 2 | SRS-Resource ::= SEQUENCE {  ... ...  -- Includes parameters for configuration of carrier based SRS switching  -- Corresponds to L1 parameter 'SRS-CarrierSwitching' (see 38,214, section FFS\_Section)  carrierSwitching ~~FFS\_Value~~SRS-CarrierSwitching OPTIONAL,  ... ...  -- Subset of PMIs addressed by TRIs from 1 to ULmaxRank. Corresponds to L1 parameter 'ULmaxRank' (see 38.211, section 6.3.1.5)  maxRank ENUMERATED {port1, ports2, ports4} OPTIONAL  }  SRS-ResourceId ::= INTEGER (0..maxNrofSRS-Resources-1)  ~~-- FFS\_FIXME: This configuration is not used anywhere.~~  ~~-- FFS\_CHECK: Is this placed correctly?~~  SRS-CarrierSwitching ::= SEQUENCE {  ...  } |  |
| Z070 | The moitoringCells within SRS-CarrierSwitching should indicate a list of serving cells, and we could use the servingCellIndex as a reference. | 2 | SRS-CarrierSwitching ::= SEQUENCE {  ... ...  -- A set of serving cells for monitoring PDCCH conveying SRS DCI format with CRC scrambled by TPC-SRS-RNTI  -- Corresponds to L1 parameter 'SRS-monitoring-cells' (see 38.212, 38.213, section 7.3.1, 11.3)  -- FFS\_CHECK: "Could this be on several serving cells? If so, it should be a list, right?  -- FFS: RAN1 models different RNTIs (on PDCCH) as different Search Spaces. Do the same here? Group e.g. with monitoring periodicity  -- and other PDCCH parameters (if any)  moitoringCells ~~INTEGER (0.. 31)~~SEQUENCE (SIZE(1..maxNrofServingCells)) OF ServCellIndex OPTIONAL  } |  |
| Z071 | For the maxRank in SRS-Resource, the value range in RAN1 excel is “1 … NrofSRS-Ports”, so “ports3” is a valid value when nrofSRS-Ports is set to ports4. | 2 | SRS-Resource ::= SEQUENCE {  srs-ResourceId SRS-ResourceId,  ... ...  -- Subset of PMIs addressed by TRIs from 1 to ULmaxRank. Corresponds to L1 parameter 'ULmaxRank' (see 38.211, section 6.3.1.5)  maxRank ENUMERATED {port1, ports2, ports3, ports4} OPTIONAL  } |  |
| Z072 | According to L1 parameters excel , the value range of aperiodicSRS-ResourceTriggers should be “INTEGER (1..maxNrofSRSTriggerStates-1)”, and when the field is absent the UE applies the value 0. | 2 | SRS-ResourceSet ::= SEQUENCE {  srs-ResourceSetId SRS-ResourceSetId,  srs-ResourcesIds SEQUENCE (SIZE(1..maxNrofSRS-ResourcesPerSet)) OF SRS-ResourceId,  -- The DCI "code point" upon which the UE shall transmit SRS according to this SRS resource set configuration.  -- FFS: Verify definition and usage.  -- Corresponds to L1 parameter 'AperiodicSRS-ResourceTrigger' (see 38.214, section FFS\_Section)  aperiodicSRS-ResourceTriggers INTEGER (1..maxNrofSRSTriggerStates-1)~~SEQUENCE (SIZE (1..maxNrofSRSTriggerStates)) OF FFS\_Value~~ OPTIONAL,  -- ID of CSI-RS resource associated with SRS resource set in non-codebook based operation  -- Corresponds to L1 parameter 'SRS-AssocCSIRS' (see 38.214, section 6.2.1) |  |
| Z073 | The comb offset should be defined in transmissionComb structure, and is mandatory present. | 2 | transmissionComb CHOICE {  n2 SEQUENCE {  -- Cyclic shift configuration. Corresponds to L1 parameter 'SRS-CyclicShiftConfig' (see 38.214, section 6.2.1)  cyclicShift INTEGER (0..7) OPTIONAL,  combOffset INTEGER (0..1)  },  n4 SEQUENCE {  -- Cyclic shift configuration. Corresponds to L1 parameter 'SRS-CyclicShiftConfig' (see 38.214, section 6.2.1)  cyclicShift INTEGER (0..11) OPTIONAL,  combOffset INTEGER (0..3)  }  }, |  |

#### – SubcarrierSpacing

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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| Z076 | Like SubcarrierSpacingSSB, introduce a new definition of SubcarrierSpacingCSIRS to facilitate the more efficient reference when needed, e.g. refer to the definition of SubcarrierSpacingCSIRS when needed in CSI-RS-ResourceConfig-Mobility.  Besides, the subcarrier spacing for csi-rs contains more code points compared to other signals such as SSB or data. This can be compressed into 2 bits (using similar logic as the one for SSB etc) | 2 | – *SubcarrierSpacing* The *SubcarrierSpacing* IE determines the subcarrier spacing.  *SubcarrierSpacing* information element  -- ASN1START  -- TAG-SUBCARRIER-SPACING-START  -- Check value range! Currently used for subcarrierSpacingCommon (SIB1, Msg2, Msg4  -- FFS: Replace this 2-bit field by a 1-bit field: ENUMERATED {sc1, sc2}. Then define that sc1 = 15 kHz and sc2 = 30 kHz  -- when carrier frequency < 6 GHz and sc1 = 60 kHz and sc2 = 120 kHz when carrier frequency is > 6GHz?  SubcarrierSpacing ::= ENUMERATED {kHz15, kHz30, kHz60, kHz120}  -- 15 or 30 kHz (<6GHz), 120 and 240 kHz (>6GHz).  SubcarrierSpacingSSB ::= ENUMERATED {kHz15, kHz30, kHz120, kHz240)  -- {15kHz,30kHz,60kHz} for sub6, {60kHz,120kHz,240kHz} for over6  SubcarrierSpacingCSIRS ::= ENUMERATED {scs15or60, scs30or120, scs60or240)  SubcarrierSpacingRACH ::= TYPE\_FFS!  -- TAG-SUBCARRIER-SPACING-STOP  -- ASN1STOP |  |

#### 6.3.3 UE capability information elements

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
| Z077 | Add the “eutra” to the “RAT type” to keep it consistent with the description of UE-CapabilityRAT-ContainerList field:  Furthermore, we suggest to take the same RAT-Type definition as in the LTE, then the same “UE Radio Capability ”definition as in 36.413[9.2.1.27] can be reused by the N2 interface. When the UE moved between the LTE and NR, the GNB/Enb can use the stored UE capability(from the core network) directly without any conversion. | 2 | *RAT-Type* information element  -- ASN1START  -- TAG-RAT-TYPE-START  -- Eutra shall be added to Rat Type  RAT-Type ::= ENUMERATED {nr, mrdc, spare1, ...} |  |
| Z078 | Delete definition of “SubCarrierSpacing” in UE-NR-Capability for that it has been defined separately in chapter 6.3.2 | 2 | *UE-NR-Capability* The IE *UE-NR-Capability* is used to convey the NR UE Radio Access Capability Parameters, see TS 38.306 [yy].  *UE-NR-Capability* information element  ....  CA-BandwidthClass ::= ENUMERATED {a, b, c, d, e, f, ...}  MIMO-Capability ::= SEQUENCE {  -- FFS on the parameters  }  ModulationOrder ::= SEQUENCE {  -- FFS on the parameters  }  ~~SubCarrierSpacing ::= SEQUENCE {~~  ~~-- FFS on the parameters~~  ~~}~~  ..... |  |
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#### 6.3.4 Other information elements

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#### 6.4 RRC multiplicity and type constraint values

#### – Multiplicity and type constraint definitions

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| I-No | Description | Class | Details (proposed solution/ discussion) | Status/ ref |
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| Z080 | RAN1 has agreed the value of maxNrofNZP-CSI-RS-Resources is 128. | 2 | maxNrofNZP-CSI-RS-Resources INTEGER ::= ~~ffsValue~~128 -- Maximum number of Non-Zero-Power (NZP) CSI-RS resources  maxNrofNZP-CSI-RS-Resources-1 INTEGER ::= ~~ffsValue~~127 -- Maximum number of Non-Zero-Power (NZP) CSI-RS resources minus 1 |  |
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#### 7 Variables and constants

#### 7.1 Timers

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#### 7.1.1 Timers (Informative)

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#### 7.1.2 Timer handling

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#### 7.2 Counters

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#### 7.3 Constants

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#### 7.4 UE variables

#### – VarMeasConfig

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#### – VarMeasReportList

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#### 8 Protocol data unit abstract syntax

#### 8.1 General

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#### 8.2 Structure of encoded RRC messages

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#### 8.3 Basic production

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#### 8.4 Extension

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#### 8.5 Padding

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#### 9 Specified and default radio configurations

#### 9.1 Specified configurations

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#### 9.2 Default radio configurations

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#### 9.2.1 SRB configurations

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#### 9.2.1.1 SRB1/SRB1S

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#### 9.2.1.2 SRB2/SRB2S

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#### 9.2.1.3 SRB3

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#### 9.2.2 SRB configurations

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#### 9.2.2.1 SRB1/SRB1S

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#### 9.2.2.2 SRB2/SRB2S

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#### 9.2.2.3 SRB3

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#### 10 Generic error handling

#### 10.1 General

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#### 10.2 ASN.1 violation or encoding error

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#### 10.3 Field set to a not comprehended value

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#### 10.4 Mandatory field missing

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#### 10.5 Not comprehended field

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#### 11 Radio information related interactions between network nodes

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#### 11.1 General

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#### 11.2 Inter-node RRC messages

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#### 11.2.1 General

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#### 11.2.2 Message definitions

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#### – HandoverCommand

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#### – HandoverPreparationInformation

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#### – SCG-Config

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#### – SCG-ConfigInfo

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#### 11.3 Inter-node RRC information element definitions

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#### – CandidateCellInfoList

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#### 11.4 Inter-node RRC multiplicity and type constraint values

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#### 12 Processing delay requirements for RRC procedures

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#### Annex A (informative): Guidelines, mainly on use of ASN.1

#### A.3.8 Guidelines on use of parameterised SetupRelease type

#### – ParentIE-WithEM

#### – ChildIE1-WithoutEM

#### – ChildIE2-WithoutEM

#### A.6 Guidelines regarding use of need codes

#### Annex <X> (informative): Change history 180

# Sections not part of the review (for information)

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# List of last I-No (Issue Number)

Companies indicate their last used I-No, to avoid duplication.

|  |  |
| --- | --- |
| **Company** | **Last used I-No** |
| ZTE | Z086 |
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