3GPP TSG-RAN WG2 #117e Tdoc R2-22xxxxx

Electronic Meeting, 21st Feb – 3rd Mar 2022

Agenda Item: 6.1.4.1.1

Source: Ericsson

Title: [AT117-e][031][NR16] Connection Control I (Ericsson)

Document for: Discussion

# 1 Introduction

This contribution summarizes the following email discussion:

* [AT117-e][031][NR16] Connection Control I (Ericsson)

 Scope: Treat R2-2203408, R2-2202228, R2-2203410, R2-2203255, R2-2203132, R2-2202232, R2-2203438. Ph1 Determine agreeable parts, Ph2 for agreeable parts, progress CRs.

 Intended outcome: Report, Agreed CRs.

 Deadline: Schedule 1

 A **first round** with **Deadline for comments W1 Thur Feb 24th 1200 UTC** to settle scope what is agreeable etc

 A Final round with **Final deadline W2 Wed March 2nd 1200 UTC** to settle details / agree CRs etc.

Contact person(s) for each participating company:

|  |  |
| --- | --- |
| **Company** | **Email** |
| Ericsson | hakan.l.palm@ericsson.com |
| Qualcomm | (Mouaffac) mambriss@qti.qualcomm.com  |
| Apple | naveen.palle@apple.com |
| Huawei, HiSilicon | zhaoyang@huawei.com |
| MediaTek | chun-fan.tsai@mediatek.com |
| Nokia | amaanat.ali@nokia.com |
| ZTE | liu.yu3@zte.com.cn |
| vivo | tingting.zhong@vivo.com |
| NEC | hisashi.futaki @ nec.com |
| Google | frankwu@google.com |
| CATT | xuhao@catt.cn |
| Intel | sudeep.k.palat@intel.com |
| Samsung | sy0123.jung@samsung.com |

# 2 Discussion

## 2.1 Non-comprehended fields in ServingCellConfigCommon

[R2-2203408](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_117-e/Docs/R2-2203408.zip) Non-comprehended fields in ServingCellConfigCommon Ericsson CR Rel-16 38.331 16.7.0 2955 - F NR\_newRAT-Core, TEI16

Moved from 6.1.4

[R2-2202228](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_117-e/Docs/R2-2202228.zip) Handling of ServingCellConfigCommon Qualcomm Incorporated CR Rel-16 38.331 16.7.0 2880 - F TEI16

At #116e, RAN2 agreed the following:

*• For R15 we don’t change the TS by a general statement. If there are interoperability issues they can be handled case by case.*

*• Adopt the following principles for release-16 IE/fields under ServingCellConfigCommon.

The network does not have to adjust configurations by release-16 fields in ServingCellConfigCommon to match the UE capability.
The UE disregards a configuration it does not support or does not comprehend.*

The two draft CRs above captures the agreement in differernt sections of TS 38331..

In the first phase, companies are asked to respond on how to progress on the CRs.

* Alt 1) Select Ericsson CR to continue work on agreable CR.
* Alt 2) Select Qualcomm CR to continue work on agreeable CR.
* Alt 3) Merge the two CRs and continue work on agreeable CR.
* Alt 4) No CR is needed.

**Q: Which alternative 1-4 do you prefer? Please also provide detailed comments on the CR(s).**

|  |  |  |
| --- | --- | --- |
| **Company** | **Alt 1, 2, 3, 4** | **Comments** |
| Qualcomm Incorporated | Alt.2 | The main difference between the two CRs is that Qualcomm CR clarifies that the UE does not store the disregarded configuration, e.g. UL common configuration for DL only SCell. We think this approach is more future proof.We do not have a strong view on which section the new text is captured in. So we are also fine with the placement as propsoed by Ericsson’s CR. |
| Apple | Alt.2 is ok, but we can go with majority |  |
| Huawei, HiSilicon | Alt 2 or Alt 4 | Even without any statement, we think we alrready support so today. If there is a strong wish to put it into the specification, we think Alt 2 is aligning with the previous agreement better, but some unnecessary text should be removed (as the change is added in Rel-16 RRC spec). NOTE x: The UE behaviour specified in this section does not apply to the fields in ServingCellConfigCommon ~~that are defined in release-16 and future releases~~. The UE disregards a configuration and does not store the corresponding field(s) if the UE does not support or does not comprehend the configuration.We definitely don’t see need to have Alt 3. |
| MediaTek | Alt-2 or Alt-4 | We don’t see srong need to clarify this in SPEC. But if needed, we think a NOTE is sufficient.  |
| Nokia | Ok with majority | In the Qualcomm’s CR, we think the statement in the cover page is not accurate. „The network would adjust the content of *ServingCellConfiguCommon* to the UE capability“In our understanding the UE is the one that has to comply to the CR. If the network prunes the configuration as per UE capability there should be anyway no issue which implies additional network functionality and if it doesn’t anyway the UE disregards the parts it does not comprehend.  |
| ZTE | Alt.1 or Alt.2 (with majority) | Alt.1 and Alt.2 are all ok to us, and Alt.3 is not acceptable to us. |
| vivo | Alt.1 or Alt.2 | Both Alt.1 and Alt.2 are ok. |
| NEC | Alt.3 | Not a strong view on which CR, while it seems or might be better to apply the changes proposed by Qualcomm CR with the cover page (reason for change) in Ericsson CR. |
| Google | Alt. 2 | We are OK to have a NOTE to clarify the UE behaviour. |
| CATT | Alt.2 or majority |  |
| Intel | Prefer alt 1 | No strong view and can go with majority. Prefer to avoid NOTEs where possible.Regarding the difference pointed out by Qualcomm, the Ericsson CR says „UE shall ignore“, which should then make it similar in terms of handling the fields?Agree with Huawei comment to remove the reference to a release. Since this is Rel-16 spec, its applicability is already clear. |
| Ericsson | Alt 1 (proponent) | We think this should be captured in 38331, and are fine with majority view on the section.On Huawei/Intel comment: We think „rel-16 and later release“ (or similar) has to be mentioned, to make clear this does not apply for Rel-15 fields. This text works also in Rel-17 version of the spec. |
| Samsung | Prefer alt 2 | At least it would be good to capture our agreement in the specification. Between Alt 1 and Alt 2, we think Alt 2 is clearer than Alt 1. |

 **Summary:**

## 2.2 R2-2203410 Clarification of commonSearchSpaceList

[R2-2203410](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_117-e/Docs/R2-2203410.zip) Clarification of commonSearchSpaceList Ericsson CR Rel-16 38.331 16.7.0 2957 - F NR\_newRAT-Core, TEI16

In the first phase, companies are asked to respond on how to progress on the CRs.

Q: Do you support the intent of the CR? Please also provide detailed comments on the CR.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Yes | Suggested change is aligned with the common understanding. It’s good to have such clarification to the spec.  |
| Huawei, HiSilicon | No | We are not sure why this is an issue, we understand if a new BWP is configured, it should not impact the parameters linked to previous configured BWP. So the intention is correct but we don’t see need to change. |
| MediaTek | No | Similar view as HWIt is difficult to understand the change and the motivation. For per BWP configuration, It should be already clear that parameter in one BWP does not impact the other. |
| Nokia | Tend to yes | If there is consensus to clarify something this is okay for us |
| ZTE | Yes or No | The change in this CR is a common understanding that a BWP-specific parameter does not impact a parameter from another BWP. If an IoT issue has been found in the field, we can merge this CR to a rapporteur’s CR ( including R15 CR), otherwise, no CR is needed. |
| vivo | No | Agree with HW. |
| NEC | Yes | This clarification is useful, so we support. |
| Google | Not strong view | We understand parameters for different BWPs are independent. We are fine to have the CR if there is an IOT issue in the field. |
| CATT | No | The parameter is configured per BWP. It is hard to be misunderstood. |
| Intel | No | Agree with others it should be clear it is applicable for this BWP and there is a not much possibility of misintepretation.Further, if there is really an issue in the field, it is not clear to me why this clarification is only mentioned for replacement and not initial configuration. |
| Ericsson | Yes (proponent) | We agree with Qualcomm, and would prefer a CR, since found in IOT. We are also fine to go with majority view and not have the CR. We are als fine to capture in chair’s note. |
| Samsung | Yes but | Since commonSearchSpaceList or commonSearchSpaceListExt is carried over BWP-DownlinkCommon (i.e. it's per BWP), the intention of the CR seems correct.On the other hand, RAN2 needs to discuss if this change is really needed, i.e. most companies could have already implemented in the intended way. |

**Summary:**

## 2.3 R2-2203255 Correction to RRC reconfiguration for IAB

IAB

[R2-2203255](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_117-e/Docs/R2-2203255.zip) Correction to RRC reconfiguration for IAB Google Inc. CR Rel-16 38.331 16.7.0 2874 1 F NR\_IAB-Core R2-2201540

In the first phase, companies are asked to respond on how to progress on the CRs.

Q: Do you support the intent of the CR? Please also provide detailed comments on the CR.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon | Yes | Intention to align the resume with suspend on BH RLC Channel seems correct. |
| Nokia | Yes | We support the change |
| vivo | Yes | BH RLC Channel needs to be resumed upon receiving the first *RRCReconfiguration* message after completing the RRC reestablishment procedure. |
| Google | Yes | Proponent |
| CATT | Yes |  |
| Intel | Yes |  |
| Ericsson | Yes |  |
| Samsung | Yes |  |

**Summary:**

## 2.4 R2-2203132 Correction on invalid symbol pattern

URLLC

[R2-2203132](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_117-e/Docs/R2-2203132.zip) Correction on invalid symbol pattern Huawei, HiSilicon CR Rel-16 38.331 16.7.0 2929 - F NR\_L1enh\_URLLC-Core

In the first phase, companies are asked to respond on how to progress on the CRs.

Q: Do you support the intent of the CR? Please also provide detailed comments on the CR.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Partially | * Change-1: The changes for the invalidSymbolPatternIndicatorDCI-0-1 and invalidSymbolPatternIndicatorDCI-0-2 are **not needed**, we can simply point out to the 38.214 spec (We prefer to not duplicate the text captured from other specifications as it may change in relevant specifications.

Change-2: The changes for „InvalidSymbolPattern-r16“ is aligned with our understanding, in addition the details of how to interpret 2 slot bits in case of ECP seems to be not specified in 38.214 .. **we’re ok with the change** |
| Apple | Change 2 is ok, and same view as Qualcomm on refereing to RAN1 spec for first change. |  |
| Huawei, HiSilicon | Yes | Proponent. For Change 1, we can also accept to refer to 38.214. |
| Nokia | Yes | Agree with Qualcomm’s view |
| ZTE | Yes |  |
| vivo | Yes |  |
| Google | Yes | Agree with Qualcomm’s view for the first change. We are OK with the second change. |
| CATT | Yes |  |
| Ericsson(Zhenhua Zou) | Yes | Okay for the first one. No strong view, but it might be better to add the wording „always“ as below that can faciliate a better understanding. The field *invalidSymbolPatternIndicatorDCI-0-1* applies to the DCI format 0\_1 and when the field is absent, the UE always applies the invalid symbol pattern for DCI format 0\_1. The field *invalidSymbolPatternIndicatorDCI-0-2* applies to DCI format 0\_2 and when the field is absent, the UE always applies the invalid symbol pattern for DCI format 0\_2 (see TS 38.214 [19] clause 6.1).Okay for the second one too, but the last sentence should be added in the field description of *periodicityAndPattern* as in the legacy *RateMatchPattern*. As a matter of fact, the first sentence of the field description *periodictyAndPattern* is incomplete. ***periodicityAndPattern***A time domain repetition pattern at which the pattern defined by *symbols* recurs (in time domain). |
| Samsung | Yes | We think it's more or less editorial issues considering current field description refers to relevant specification (e.g. TS 38.214). So it may be good to be merged into Rap CR if agreeable. |

 **Summary:**

## 2.5 R2-2202232 Correction to the reference of DCI format 2\_6 field descriptions

UE Pow sav

[R2-2202232](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_117-e/Docs/R2-2202232.zip) Correction to the reference of DCI format 2\_6 field descriptions ROHDE & SCHWARZ CR Rel-16 38.331 16.7.0 2881 - F NR\_UE\_pow\_sav-Core

In the first phase, companies are asked to respond on how to progress on the CRs.

Q: Do you support the intent of the CR? Please also provide detailed comments on the CR.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Yes | Editorial correction ... Rapporteur CR. |
| Apple | Ok |  |
| Huawei, HiSilicon | Yes | The corrections are related to editorial changes to the field descriptions and are acceptable to us. |
| MediaTek | OK | But should be in rapporteur’s CR |
| Nokia | Ok | Editorial can be moved to rapporteur CR |
| ZTE | Yes | The CR can be merged to a rapporteur’s CR. |
| vivo | Yes | It can be merged into the rapporteur’s CR. |
| Google | Yes | The changes can be merged into a rapporteur’s CR. |
| CATT | Yes |  |
| Intel | Yes | Should be merged in rapporteur CR |
| Ericsson | Yes | We agree, should be captured in a rapp CR. |
| Samsung | Yes | Minor editorials so it should be merged into Rap CR. |

 **Summary:**

## 2.6 R2-2203438 Miscellaneous aspects on UAI

UE assistance Overheating

[R2-2203438](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_117-e/Docs/R2-2203438.zip) Miscellaneous aspects on UAI Ericsson discussion

Companies are invited to provided their views for each of the proposals below:

**Proposal 1 Clarify in 38.331 and 36.331 that the UE should re-start the timer for a configured IE on UAI upon receiving an RRCReconfiguration message reconfiguring this IE.**

**Proposal 2 Clarify in 38.331 and 36.331 how the UE can implicitly indicate a preference for NR SCG release within the overheating framework in UAI.**

**Proposal 3 A new IE is introduced in CG-ConfigInfo to carry OverheatingAssistance for SCG in EN-DC.**

**Proposal 4 RAN2 to discuss whether to dumify overheatingAssistanceSCG-r16 in CG-ConfigInfo.**

**Proposal 5 Clarify the conditional presence of the field overheatingAssistanceConfigForSCG to allow delta configuration for UAI overheating in EN-DC.**

Q: Do you support the intent of the proposals P1, P2, P3, P4 and P5 above? (Please provide in the Yes/No column the view for each proposal e.g. Yes:P1,P2,P3 No:P4,P5)

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Partially | P1: we agreeP2: agree with the intention **but there is techinical error that needs to be fixed**. The proposal does not work for NR-DC since for NR-DC, NR MCG’s SCCs need to be accounted for as well for the reducedMaxCCs, and bandwidth is also across CGs. It only works for EN-DC.Power saving is different as it only counts CCs or aggregated BW in the same CG so setting to zero always works regardless of EN-DC or NR-DC.P3 & P4: seems an optimization. without this, the overheating still works well .. will go with majorityP5: we agree. |
| Apple | Pls see comments | P1: okP2: We do not think this is needed.P5: okP3: not essentialP4: not essential |
| Huawei, HiSilicon | See comments | * For P1: it is a rare case and not an essential issue. It can be up to UE implentation whether to restart the timer.
* For P2: overheating is different from the power saving case. For the former, neither the maximum BW nor the maximum CCs is per cell group. So, the UE can not implicitly indicate the SCG release if both MCG and SCG have FR1 or FR2 cells. There is no need to have such change considering it is not a essential issue.
* For P3&P4: not essential.

For P5: Agree with the intention. |
| MediaTek | See Comment | P1 – No. It is a corner case and it is not acceptable to us to change R16 UE behavior. Why the UE has to restart the timer if the NW configure a shorter timer and the time is already passed since the begging of original timer? P2 – Acceptable, but don’t think it is really necessaryP3/P4 – No strong viewP5 – Acceptable, but don’t think it is really necessary |
| Nokia | See comments | P1: It seems to refer to the case, the UAI for delayBudget is "modified", while it could be alternatively handled by Release/Setup. Hence, not clear about the actual need. Also if agreed, there may be new impact to the UE how to handle the previously assesed value of "delayBudget"P2: Not critical it seems. The implicit indication would anyway let NW to decide, and this will be NW decision to release SCG or notP3: Not clear why MR-DC wouldnt also cover EN-DC. P4: Without dummyfing, empty field could imply the same. Hence nothing would be broken if we keep the INM message as it is?P5: This is changing the original principle. COndition was designed in a way that SCG is added for EN-DC only for the case when MN overheating is configured. |
| Ericsson | Yes | P1: Since the behavior is not clear in this case, the intention is to have aligned procedures for this. To Nokia, even with the SetupRelease structure, the network cannot release and setup this configuration on the same message.P2: Our intention is to clarify this case for overheating. Note that we also added a clarification for power saving, so we should be consistent and also clarify the overheating case, whether we update the current note are clarify it in another way we can further discuss.P3/P4: We would like to further understand how P3 could be an optimization? For EN-DC, without a new field, the only way the MN can forward the SCG overheating report o the SN is by also including IDC information, which may not be even configured by the network – so it would be good if companies can clarify how the MN, in EN-DC case, could forward the SCG report to the SN without configuring IDC assistance info? The UE may anyway not support both features.P5: We think the principle is not changed, we could discuss the detailed wording when updating the field conditions. |
| vivo |  | P1: we think it can be up to UE implementation whether to restart the timer or keep the timer running.P2: not critical.P3&P4: no strong view.P5: agree with the intention. |
| Google |  | P1: No. The reconfiguration case is a corner case. If the network needs to do so, the network can do release and setup as described by Nokia to ensure that the UE restarts the timer. P2: No. With the changes, the UE can indicate overheating in UAI for power saving. We wonder anything is broken without the changes.P3/P4/P5: OK |
| CATT |  | P1: We share the same concer that is it a corner case.P2: not key issue.P3: not key issue.P4: not key issue.P5: No strong view, can follow the majority’s view. |
| Intel |  | P1: We don’t see this as essential to correct in Rel-16 as the consequences of both implementations do not seem severe. But we are OK to update if there is a majority.P2: Not essential. As others pointed out, such alignment with powersaving actually causes more issues.P3/P4: Agree with the proponents – looks like an issue to address.P5: Agree. Conditions should not refer to presence of another field (unless the intention is indeed to always have to configure them both together).  |
| Samsung | See comments | P1: We understand it has been specified in 5.7.4.2 so there is no need to specify further. P2: We agree with the intention but we wonder whether mhz0 can be used in FR1 for overheating. P3 & 4: Not support because it can be solved with gNB implementation. For instance, even if the network has not configured UE with IDC, MN may still build the field *affectedCarrierFreqCombInfoListMRDC* with meaningless info, e.g. setting spare to *interferenceDirectionMRDC*, and no optional field.P5: Support |
| ZTE | See comments | P1: support;P2: not essential; P3: support, we think the obervation from proponent is correct and we are fine to fix it.P4: Not support, this may cause IoT problem, e.g. if IDC was configured, then the old field can still be used. P5: support. |

 **Summary:**

1. Tbd

# Conclusion

Based on the discussion above, we propose:

[Proposal 1 Tbd](#_Toc96350734)

# References

1. -

# Appendix

**Text proposal to TS 38.331**

### 5.5.3 Performing measurements

#### 5.5.3.1 General

An RRC\_CONNECTED UE shall derive cell measurement results by measuring one or multiple beams associated per cell as configured by the network, as described in 5.5.3.3. For all cell measurement results, except for RSSI, and CLI measurement results in RRC\_CONNECTED, the UE applies the layer 3 filtering as specified in 5.5.3.2, before using the measured results for evaluation of reporting criteria, measurement reporting or the criteria to trigger conditional reconfiguration execution. For cell measurements, the network can configure RSRP, RSRQ, SINR, RSCP or EcN0 as trigger quantity. For CLI measurements, the network can configure SRS-RSRP or CLI-RSSI as trigger quantity. For cell and beam measurements, reporting quantities can be any combination of quantities (i.e. only RSRP; only RSRQ; only SINR; RSRP and RSRQ; RSRP and SINR; RSRQ and SINR; RSRP, RSRQ and SINR; only RSCP; only EcN0; RSCP and EcN0), irrespective of the trigger quantity, and for CLI measurements, reporting quantities can be either SRS-RSRP or CLI-RSSI. For conditional reconfiguration execution, the network can configure up to 2 quantities, both using same RS type. The UE does not apply the layer 3 filtering as specified in 5.5.3.2 to derive the CBR measurements.

The network may also configure the UE to report measurement information per beam (which can either be measurement results per beam with respective beam identifier(s) or only beam identifier(s)), derived as described in 5.5.3.3a. If beam measurement information is configured to be included in measurement reports, the UE applies the layer 3 beam filtering as specified in 5.5.3.2. On the other hand, the exact L1 filtering of beam measurements used to derive cell measurement results is implementation dependent.

The UE shall:

1> whenever the UE has a *measConfig*, perform RSRP and RSRQ measurements for each serving cell for which *servingCellMO* is configured as follows:

2> if the *reportConfig* associated with at least one *measId* included in the *measIdList* within *VarMeasConfig* contains an *rsType* set to *ssb* and *ssb-ConfigMobility* is configured in the *measObject* indicated by the *servingCellMO*:

3> if the *reportConfig* associated with at least one *measId* included in the *measIdList* within *VarMeasConfig* contains a *reportQuantityRS-Indexes* and *maxNrofRS-IndexesToReport* and contains an *rsType* set to *ssb*:

4> derive layer 3 filtered RSRP and RSRQ per beam for the serving cell based on SS/PBCH block, as described in 5.5.3.3a;

3> derive serving cell measurement results based on SS/PBCH block, as described in 5.5.3.3;

2> if the *reportConfig* associated with at least one *measId* included in the *measIdList* within *VarMeasConfig* contains an *rsType* set to *csi-rs* and *CSI-RS-ResourceConfigMobility* is configured in the *measObject* indicated by the *servingCellMO*:

3> if the *reportConfig* associated with at least one *measId* included in the *measIdList* within *VarMeasConfig* contains a *reportQuantityRS-Indexes* and *maxNrofRS-IndexesToReport* and contains an *rsType* set to *csi-rs*:

4> derive layer 3 filtered RSRP and RSRQ per beam for the serving cell based on CSI-RS, as described in 5.5.3.3a;

3> derive serving cell measurement results based on CSI-RS, as described in 5.5.3.3;

1> for each serving cell for which *servingCellMO* is configured, if the *reportConfig* associated with at least one *measId* included in the *measIdList* within *VarMeasConfig* contains SINR as trigger quantity and/or reporting quantity:

2> if the *reportConfig* contains *rsType* set to *ssb* and *ssb-ConfigMobility* is configured in the *servingCellMO*:

3> if the *reportConfig*contains a *reportQuantityRS-Indexes* and *maxNrofRS-IndexesToReport*:

4> derive layer 3 filtered SINR per beam for the serving cell based on SS/PBCH block, as described in 5.5.3.3a;

3> derive serving cell SINR based on SS/PBCH block, as described in 5.5.3.3;

2> if the *reportConfig* contains *rsType* set to *csi-rs* and *CSI-RS-ResourceConfigMobility* is configured in the *servingCellMO*:

3> if the *reportConfig*contains a *reportQuantityRS-Indexes* and *maxNrofRS-IndexesToReport*:

4> derive layer 3 filtered SINR per beam for the serving cell based on CSI-RS, as described in 5.5.3.3a;

3> derive serving cell SINR based on CSI-RS, as described in 5.5.3.3;

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *reportType* for the associated *reportConfig* is set to *reportCGI* and timer T321 is running:

3> if *useAutonomousGaps* is configured for the associated *reportConfig*:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using autonomous gaps as necessary;

3> else:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using available idle periods;

3> if the cell indicated by *reportCGI* field for the associated *measObject* is an NR cell and that indicated cell is broadcasting *SIB1* (see TS 38.213 [13], clause 13):

4> try to acquire *SIB1* in the concerned cell;

3> if the cell indicated by *reportCGI* field is an E-UTRA cell:

4> try to acquire *SystemInformationBlockType1* in the concerned cell;

2> if the *ul-DelayValueConfig* is configured for the associated *reportConfig*:

3> ignore the *measObject;*

3> for each of the configured DRBs*,* configure the PDCP layer to perform corresponding average UL PDCP packet delay measurement per DRB;

2> if the *reportType* for the associated *reportConfig* is *periodical*, *eventTriggered* or *condTriggerConfig*:

3> if a measurement gap configuration is setup, or

3> if the UE does not require measurement gaps to perform the concerned measurements:

4> if *s-MeasureConfig* is not configured, or

4> if *s-MeasureConfig* is set to *ssb-RSRP* and the NR SpCell RSRP based on SS/PBCH block, after layer 3 filtering, is lower than *ssb-RSRP,* or

4> if *s-MeasureConfig* is set to *csi-RSRP* and the NR SpCell RSRP based on CSI-RS, after layer 3 filtering, is lower than *csi-RSRP*:

5> if the *measObject* is associated to NR and the *rsType* is set to *csi-rs*:

6> if reportQuantityRS-Indexes and maxNrofRS-IndexesToReport for the associated reportConfig are configured:

7> derive layer 3 filtered beam measurements only based on CSI-RS for each measurement quantity indicated in *reportQuantityRS-Indexes*, as described in 5.5.3.3a;

6> derive cell measurement results based on CSI-RS for the trigger quantity and each measurement quantity indicated in *reportQuantityCell* using parameters from the associated *measObject*, as described in 5.5.3.3;

5> if the *measObject* is associated to NR and the *rsType* is set to *ssb*:

6> if reportQuantityRS-Indexes and maxNrofRS-IndexesToReport for the associated reportConfig are configured:

7> derive layer 3 beam measurements only based on SS/PBCH block for each measurement quantity indicated in *reportQuantityRS-Indexes*, as described in 5.5.3.3a;

6> derive cell measurement results based on SS/PBCH block for the trigger quantity and each measurement quantity indicated in *reportQuantityCell* using parameters from the associated *measObject*, as described in 5.5.3.3;

5> if the *measObject* is associated to E-UTRA:

6> perform the corresponding measurements associated to neighbouring cells on the frequencies indicated in the concerned *measObject*, as described in 5.5.3.2;

5> if the measObject is associated to UTRA-FDD:

6> perform the corresponding measurements associated to neighbouring cells on the frequencies indicated in the concerned *measObject*, as described in 5.5.3.2;

4> if the *measRSSI-ReportConfig* is configured in the associated *reportConfig*:

5> perform the RSSI and channel occupancy measurements on the frequency indicated in the associated *measObject*;

3> else:

4> not perform the concerned measurements;

2> if the *reportType* for the associated *reportConfig* is set to *reportSFTD* and the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than one:

3> if the *reportSFTD-Meas* is set to *true:*

4> if the *measObject* is associated to E-UTRA:

5> perform SFTD measurements between the PCell and the E-UTRA PSCell;

5> if the *reportRSRP* is set to *true*;

6> perform RSRP measurements for the E-UTRA PSCell;

4> else if the *measObject* is associated to NR:

5> perform SFTD measurements between the PCell and the NR PSCell;

5> if the *reportRSRP* is set to *true*;

6> perform RSRP measurements for the NR PSCell based on SSB;

3> else if the *reportSFTD-NeighMeas* is included*:*

4> if the *measObject* is associated to NR:

5> if the *drx-SFTD-NeighMeas* is included:

6> perform SFTD measurements between the PCell and the NR neighbouring cell(s) detected based on parameters in the associated *measObject* using available idle periods;

5> else:

6> perform SFTD measurements between the PCell and the NR neighbouring cell(s) detected based on parameters in the associated *measObject*;

5> if the *reportRSRP* is set to *true*:

6> perform RSRP measurements based on SSB for the NR neighbouring cell(s) detected based on parameters in the associated *measObject*;

2> if the *reportType* for the associated *reportConfig* is *cli-Periodical* or *cli-EventTriggered*:

3> perform the corresponding measurements associated to CLI measurement resources indicated in the concerned *measObjectCLI*;

2> perform the evaluation of reporting criteria as specified in 5.5.4, except if *reportConfig* is *condTriggerConfig*.

NOTE 1: The evaluation of conditional reconfiguration execution criteria is specified in 5.3.5.13.

The UE capable of CBR measurement when configured to transmit NR sidelink communication shall:

1> If the frequency used for NR sidelink communication is included in *sl-FreqInfoToAddModList* in *sl-ConfigDedicatedNR* within *RRCReconfiguration* message or includedin *sl-ConfigCommonNR* within *SIB12*:

2> if the UE is in RRC\_IDLE or in RRC\_INACTIVE:

3> if the cell chosen for NR sidelink communication provides *SIB12* which includes *sl-TxPoolSelectedNormal* or *sl-TxPoolExceptional* forthe concerned frequency:

4> perform CBR measurement on pools in *sl-TxPoolSelectedNormal* and *sl-TxPoolExceptional* for the concerned frequency in *SIB12*;

2> if the UE is in RRC\_CONNECTED:

3> if *tx-PoolMeasToAddModList* is included in *VarMeasConfig*:

4> perform CBR measurements on each transmission resource pool indicated in the *tx-PoolMeasToAddModList*;

3> if *sl-TxPoolSelectedNormal*, *sl-TxPoolScheduling* or *sl-TxPoolExceptional* is included in *sl-ConfigDedicatedNR* for the concerned frequency within *RRCReconfiguration*:

4> perform CBR measurement on pools in *sl-TxPoolSelectedNormal*, *sl-TxPoolScheduling* or *sl-TxPoolExceptional* if included in *sl-ConfigDedicatedNR* for the concerned frequency within *RRCReconfiguration*;

3> else if the cell chosen for NR sidelink communication provides *SIB12* which includes *sl-TxPoolSelectedNormal* or *sl-TxPoolExceptional* forthe concerned frequency:

4> perform CBR measurement on pools in *sl-TxPoolSelectedNormal* and *sl-TxPoolExceptional* for the concerned frequency in *SIB12*;

1> else:

2> perform CBR measurement on pools in *sl-TxPoolSelectedNormal* and *sl-TxPoolExceptional* in *SidelinkPreconfigNR* for the concerned frequency.

NOTE 2: In case the configurations for NR sidelink communication and CBR measurement are acquired via the E-UTRA, configurations for NR sidelink communication in *SIB12*, *sl-ConfigDedicatedNR* within *RRCReconfiguration* used in this subclause are provided by the configurations in *SystemInformationBlockType28*, *sl-ConfigDedicatedNR* within *RRCConnectionReconfiguration* as specified in TS 36.331[10], respectively.

NOTE 3: If a UE that is configured by upper layers to transmit V2X sidelink communication is configured by NR with transmission resource pool(s) and the measurement objects concerning V2X sidelink communication (i.e. by *sl-ConfigDedicatedEUTRA-Info*), it shall perform CBR measurement as specified in subclause 5.5.3 of TS 36.331 [10], based on the transmission resource pool(s) and the measurement object(s) concerning V2X sidelink communication configured by NR.

NOTE 4: For V2X sidelink communication, each of the CBR measurement results is associated with a resource pool, as indicated by the *poolReportId* (see TS 36.331 [10]), that refers to a pool as included in *sl-ConfigDedicatedEUTRA-Info* or *SIB13*.