3GPP TSG-RAN WG2#116-e R2-21xxxxx

Electronic meeting, 1st November – 12th November 2021

Agenda Item: 6.1.4.1.2

Source: Ericsson

Title: Report of [Offline-011][NR16]RRC Measurements Other and LTE (Ericsson)

Document for: Discussion, Decision

# 1 Introduction

This contribution provides the summary of the following offline discussion.

* [AT116-e][011][NR16] RRC Measurements Other and LTE (Ericsson)

Scope: Determine agreeable parts in a first phase, for agreeable parts agree on CRs. Treat [R2-2110982](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110982.zip), [R2-2109445](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2109445.zip), [R2-2110579](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110579.zip), [R2-2110580](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110580.zip), [R2-2110697](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110697.zip), [R2-2110794](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110794.zip), [R2-2110878](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110878.zip), [R2-2111079](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2111079.zip), [R2-2110725](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110725.zip),

Intended outcome: Report, Agreed CRs if applicable

Deadline: Schedule 1

Discussions with Deadline **Schedule 1**:

A **first round** with **Deadline for comments Thursday W1 Nov 4 1200 UTC** to settle scope what is agreeable etc

A Final round with **Final deadline Thursday W2 Nov 11 1200 UTC** to settle details / agree CRs etc.

# 2 Contact Information

To make it easier to find the correct contact delegate in each company for potential follow-up questions, the rapporteur encourages the delegates who provide input to provide their contact information in this table:

|  |  |
| --- | --- |
| Company | Contact: Name (E-mail) |
| Nokia | amaanat.ali@nokia.com |
| Huawei, HiSilicon | Lili Zheng (zhenglili4@huawei.com) |
| Lenovo | Hyung-Nam Choi (hchoi5@lenovo.com) |
| MediaTek | Nathan Tenny (nathan.tenny@mediatek.com) |
| ZTE | LiuJing (liu.jing30@zte.com.cn) |
| Apple | Yuqin Chen (yuqin\_chen@apple.com) |
| NEC | hisashi.futaki@ nec.com |
| Qualcomm | (Mouaffac) [mambriss@qti.qualcomm.com](mailto:mambriss@qti.qualcomm.com) |
| OPPO | fanjiangsheng@oppo.com |
| Ericsson | Pradeepa Ramachandra (pradeepa.ramachandra@ericsson.com) |
| LGE | sangwon7.kim@lge.com |
| CATT | shijie@catt.cn |
| vivo | Yitao Mo (yitao.mo@vivo.com) |
|  |  |

# 3 Discussion

## 3.1 RRM and Measurements

1. [R2-2110982](file:///D:\\Documents\\3GPP\\tsg_ran\\WG2\\TSGR2_116-e\\Docs\\R2-2110982.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_116-eDocsR2-2110982.zip) Discussion on inter-frequency no gap measurement in NR-DC Huawei, HiSilicon discussion Rel-16 NR\_newRAT-Core

In [1], Huawei brings up the aspect of configuration of *interFrequencyConfig-NoGap-r16* in the NR-DC scenario. In the contribution, Huawei highlights that the current specification is not clear about whether *interFrequencyConfig-NoGap-r16* can be configured by both the MN and the SN. The contributions further mentions that the associated UE behaviour is also ambiguous.

**Observation 1: Based on the current specifications, it is not clear whether the measurement configurations from both the MN and the SN can contain the *interFrequencyConfig-NoGap-r16* filed in the NR-DC scenario. Besides, UE’s corresponding behaviour for performing inter-frequency no gap measurement is also ambiguous.**

**Question-1: Do you agree with the Observation-1?**

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| --- | --- | --- |
| **Company name** | **Agree?**  **(Yes/No)** | **Comments** |
| Nokia | Yes |  |
| Huawei, HiSilicon | Yes | Proponent.  For the (NG)EN-DC and NE-DC scenarios, there is no ambiguity. Only one node (i.e. the NR node) can enable the inter-frequency no gap measurement feature for UEs since this feature is only supported in the NR side.  For the NR-DC scenario, however, considering that both MN and SN are NR nodes, the rule for networks to enable the inter-frequency no gap measurement feature is not clear, which may result in ambiguity for UE’s measuring behaviour.  One issue is whether SN is allowed to configure the *interFrequencyConfig-NoGap-r16* filed for UEs. If SN cannot configure this flag, the UE is not expected to receive the field in the measurement configuration from SN.  A further issue is that if both MN and SN can control the inter-frequency no gap measurement, what the enabling rule should be. For instance, whether the two nodes control the inter-frequency measurements independently or the configuration flag from one node can override that from the other node. |
| MediaTek | Agree |  |
| ZTE | Agree |  |
| Apple | Agree |  |
| NEC | Agree |  |
| Ericsson | Agree |  |
| LGE |  | If *interFrequencyConfig-NoGap-r16* can be configured by MN and SN separately,no clarification is needed. I.e. *interFrequencyConfig-NoGap-r16* configured by MN is applied to MO configured by MN only.  However, if *interFrequencyConfig-NoGap-r16* is per UE, as gap, it should be clarified that *interFrequencyConfig-NoGap-r16* can only be set up in the measConfig associated with MCG.  The UE behavior is already clear in the field description of *interFrequencyConfig-NoGap-r16* and 5.5.3.1. |
| CATT | Agree |  |
| vivo | Agree |  |
|  |  |  |

**Rapporteur Summary:**

10 companies participated in this question and 9/10 companies agree that the current specifications are not clear regarding the configuration flexibilities for *interFrequencyConfig-NoGap-r16* in NR-DC scenario. One company mentions that the UE behaviour is already clear in the field description and the corresponding procedural text. As the observation is also regarding the network configuration aspects, based on the views of 9 companies rapporteur believes that there is some ambiguity in terms of whether both MN and SN can configure the *interFrequencyConfig-NoGap-r16*.

1. RAN2 agrees that based on the current specifications, it is not clear whether the measurement configurations from both the MN and the SN can contain the *interFrequencyConfig-NoGap-r16* filed in the NR-DC scenario. Besides, UE’s corresponding behaviour for performing inter-frequency no gap measurement is also ambiguous.

If the Observation-1 in Question-1 is agreeable, then the solutions can be discussed and as part of the solution, Huawei has proposed two options.

* **Option 1: only MN controls the inter-frequency measurement without gaps feature. The configuration flag (*interFrequencyConfig-NoGap-r16*) provided by MN applies to all the inter-frequency measurements configured by MN and SN.**
* **Option 2: MN and SN independently control the inter-frequency measurement without gaps feature. The configuration flag (*interFrequencyConfig-NoGap-r16*) provided by one node applies to the inter-frequency measurements configured by this node.**

Pros of Option-1:

* Only allowing MN to control the inter-frequency measurement without gaps feature for UE in NR-DC is simple for UE implementation with minor spec impacts

Pros of Option-2:

* Allowing MN and SN to independently control the inter-frequency measurement without gaps feature for UE in NR-DC is more favoured for utilizing the feature properly.

Cons of these options are the opposite of pros of the other option.

Based on this, rapporteur would like to ask the following question.

**Question-2: If the answer to Question-1 is YES, then which of the following option is preferrable?**

* **Option 1: only MN controls the inter-frequency measurement without gaps feature. The configuration flag (*interFrequencyConfig-NoGap-r16*) provided by MN applies to all the inter-frequency measurements configured by MN and SN.**
* **Option 2: MN and SN independently control the inter-frequency measurement without gaps feature. The configuration flag (*interFrequencyConfig-NoGap-r16*) provided by one node applies to the inter-frequency measurements configured by this node.**

|  |  |  |
| --- | --- | --- |
| **Company name** | **Option-1/ Option-2** | **Comments** |
| Nokia | Option 1 | The issue seems valid as no specification on how to configure it in NR-DC. We would prefer Option1 for simplity (i.e. only MN controls the inter-frequency measurement without gaps feature) |
| Huawei, HiSilicon | Both are ok, slightly prefer Option 1 |  |
| MediaTek | Option 1 | Option 1 seems simpler. Option 2 should be clarified that if both MN and SN configure the same inter-frequency measurement, they should set the value consistently. |
| ZTE | Option 1 with comments | Option 1 looks simpler, but there are other open issues:   1. Based on current spec, the configuration flag (*interFrequencyConfig-NoGap-r16*) is not defined in INM(e.g. CG-ConfigInfo), so SN does not know whether the function is enabled or not, and is unable to do scheduling optimization. So either we add the flag in CG-ConfigInfo, or we need to specify new rule that interFreq-NoGap is only applicable to MN configured measurements, SN should assume the gap is activated as long as it is configured. 2. In case SN configures inter-freq measurements first, and requests MN to provide gap configuration, can SN also request MN to enable this funtionality?   We agree Option 1 can solve the problem in Uu interface, but we think MN-SN coordination still needs more discussion. On the other hand, the similar issue will be discussed in Rel-17 MGE, we prefer to adopt the same/similar solution for both features. |
| Apple | See comments | We think the configuration can come from either MN or SN. And which entity configures UE does not impact how UE functions.  UE simply determines if the target frequency to measure is covered inside the active BWP or not, without differentiating which node configures this frequency.  Regarding the MN-SN coordination, since MN does the gap configuration, it is beneficial for SN to inform MN if this feature is enabled. This helps MN in determining the gap configuration to UE. |
| NEC | Option 1 | We also think the Option 1 seems simpler and could be sufficient without causing real/critical issues. |
| QCOM | Option-1 | No need to add complexity to this feature. |
| Ericsson | Option-1 | We believe option-1 is simpler and there is no major drawback of not allowing the SN to configure this. |
| LGE | Option1 | In NR-DC, all gaps can only be configured by MN, so no gap also shoule be configured by MN. |
| CATT | Option-1 | Option-1 seems simple. Do not introduce extra signaling exchanging over MN and SN, it is sufficient and efficient for MN to configure this inter-frequency measurement without gaps feature. |
| vivo | Option 1 | Similar view with the others above. |
|  |  |  |

**Rapporteur Summary:**

11 companies participated in this question and 10/11 companies prefer Option-1 based approach i.e., only MN controls the inter-frequency measurement without gaps feature. The configuration flag (interFrequencyConfig-NoGap-r16) provided by MN applies to all the inter-frequency measurements configured by MN and SN. Based on this, RAN2 can confirm the same.

1. Only MN controls the inter-frequency measurement without gaps ((interFrequencyConfig-NoGap-r16)) feature.
2. interFrequencyConfig-NoGap-r16 provided by MN applies to all the inter-frequency measurements configured by MN and SN
3. CR based on Proposal 2 and Proposal 3 is pursued in phase-2.

However, there are additional questions mentioned in the comments.

1. Based on current spec, the configuration flag (interFrequencyConfig-NoGap-r16) is not defined in INM(e.g. CG-ConfigInfo), so SN does not know whether the function is enabled or not, and is unable to do scheduling optimization. So either we add the flag in CG-ConfigInfo, or we need to specify new rule that interFreq-NoGap is only applicable to MN configured measurements, SN should assume the gap is activated as long as it is configured.
2. In case SN configures inter-freq measurements first, and requests MN to provide gap configuration, can SN also request MN to enable this funtionality?

Rapporteur believes these aspects are not covered in the original contribution and thus this can be discussed further.

1. RAN2 to further discuss the following aspects.
   1. Whether SN needs to be notified of interFrequencyConfig-NoGap-r16 via INM (CG-ConfigInfo)?
   2. Can SN request MN to configure interFrequencyConfig-NoGap-r16 (CG-Config)?

The outcome fo the first phase of this email discussion can be used to decide on whether to start CR discussions assocaited to this topic and which specific option related CR needs to be taken as baseline.

## 3.2 Other

1. [R2-2109445](file:///D:\\Documents\\3GPP\\tsg_ran\\WG2\\TSGR2_116-e\\Docs\\R2-2109445.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_116-eDocsR2-2109445.zip) Correction on msgA-SubcarrierSpacing vivo, Samsung CR Rel-16 38.331 16.6.0 2814 - F NR\_2step\_RACH-Core

In [2], the proponents brings up the issue of not being able to configure the PRACH root sequence index separately for 2-step RACH in separate ROs. The CR proposes to update the field description of *msgA-SubcarrierSpacing*.

|  |
| --- |
| ***msgA-SubcarrierSpacing***  Subcarrier spacing of PRACH (see TS 38.211 [16], clause 5.3.2). Only the values 15 or 30 kHz (FR1), and 60 or 120 kHz (FR2) are applicable. If the field is absent, the UE applies the SCS as derived from the *msg1-SubcarrierSpacing* in *RACH-ConfigCommon* in case of *msgA-PRACH-RootSequenceIndex* L=139, otherwise, the UE applies the SCS as derived from the *msgA-PRACH-ConfigurationIndex* in *RACH-ConfigGenericTwoStepRA* (see tables Table 6.3.3.1-1, Table 6.3.3.1-2, Table 6.3.3.2-2 and Table 6.3.3.2-3, TS 38.211 [16]). The value also applies to contention free 2-step random access type (*RACH-ConfigDedicated*). |

**Question-3: Do you agree with the changes in CR R2-2109445?**

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| --- | --- | --- |
| **Company name** | **Yes/No** | **Comments** |
| Nokia | Yes |  |
| Huawei, HiSilicon |  | We share the intention to align with RAN1 spec, but we prefer to further discuss TP as it might not be sufficient to cover shared RO case. In shared RO case, this IE can be also absent, and the msg A SCS can be derived from msg1 SCS. So it might be incorrect that it is absent only when I139 is used.  [vivo’s response] Thank you for understanding the intention. For the shared RO case mentioned, we would like to make some clarifications. As the PRACH configuration for 4-step is reused for 2-step RA, so the SCS of MsgA PRACH and Msg1 PRACH is definitely the same. So, based on the CR and following quoted text, the UE, in this case, can still correctly derive the SCS based on *msgA-PRACH-ConfigurationIndex*, which is absent and actually uses the value of *PRACH-ConfigurationIndex*.  ***msgA-PRACH-ConfigurationIndex***  Cell-specific PRACH configuration index for 2-step RA type. If the field is absent the UE shall use the value of corresponding 4-step random access parameter in the configured BWP. If the value is in the range of 256 to 262, the field *prach-ConfigurationIndex-v1610* should be considered configured (see TS 38.211 [16], clause 6.3.3.2). This field may only be present if no 4-step type RA is configured in the BWP or in the case of separate ROs with 4-step type RA. |
| MediaTek | Yes, but | The proposed changes seem a roundabout way of capturing the actual dependency of the fields. It might be clearer to say “If the field is absent, the UE applies the SCS as derived from the *msg1-SubcarrierSpacing* in *RACH-ConfigCommon* if that is present; otherwise, the UE applies the SCS as derived from the *msgA-PRACH-ConfigurationIndex* in *RACH-ConfigGenericTwoStepRA* (see tables…)”.  [vivo’s response] We are fine with MediaTek’s suggestion if everyone thinks that the SCS of MsgA PRACH shall be the same as that of Msg1 PRACH if *PRACH-RootSequenceIndex* L=139. |
| ZTE |  | We understand that the intention is to clarify whether msg1-SubcarrierSpacing is mandatory present in case the msgA-PRACH-RootSequenceIndex L=139 but RootSequenceIndex does not. According to current specs, the msg1-SubcarrierSpacing is only mandatory present in case RootSequenceIndex = 139.  we need to clarify first whether SCS can be different for Msg1 and MsgA. If the SCS has to be the same for Msg1 and MsgA, then the same SubcarrierSpacing will be used for both 2-step RACH and 4-step RACH no matter the msg1-SubcarrierSpacing is present or not (e.g the SCS for MsgA is the same as the SCS for Msg1, no matter the SCS is configured explicitly by msg1-SubcarrierSpacing or derived based on prach-RootSequenceIndex).  If this is the correct understanding, the following revision can be considered.    [vivo’s response] We are fine with ZTE’s revision if everyone thinks that the SCS of MsgA PRACH shall be the same as that of Msg1 PRACH even for the separate ROs. Note that this revision reverts the following RAN1 agreements.  RAN1#98bis agreement:   * For 2-step RACH in separate ROs, the following parameters (*prach-RootSequenceIndex*, *zeroCorrelationZoneConfig*, *restrictedSetConfig*), are separately configured for 2-step RACH. If absent, reuse the corresponding 4-step RACH parameters. |
| Apple |  | We think ZTE’s change is simpler and captures the correct intention. |
| NEC | Yes, but | We agree with the intention, while for the first point, the summary of change and actual changes have some differences, so wonder if text in summary of change can be used instead. |
| QCOM | Yes with comment | For the sake of simplicity, as ZTE proposed, if we can mandate the SCS of MsgA and Msg1 is always configured the same, then we can avoid the case raised for this CR. |
| OPPO | Yes but | We agree that current spec does not capture RAN’1 agreement properly. But ZTE’s version is simpler from our side. |
| Ericsson |  | Same view as ZTE in that:  Agree that msgA-SubcarrierSpacing is only mandatorily present/needed for the PARCH with a length 139 and 2-step RACH only case.  We think for the case both 2-step and 4-step RA are configured, a msg1 PRACH with a length other than L139 can not be configured together with a msgA PRACH with a length L139 since their SCS must be aligned and so does the PRACH format.  For 2-step RACH only case, SCS will be provided either by the PRACH format or the separately configured mandatory SCS.  For the case both 2-step and 4-step RA are configured, this msg1 SCS configuration may or may be not needed depending on msg1 PRACH format itself.  Since this condition here is assuming 4-step RACH is configured, SCS are aligned  The issue is then if we do allow *prach-RootSequenceIndex* L!=139, while *msgA-PRACH-RootSequenceIndex* L=139?  According to RAN1 agreement, this seems allowed:  *Agreements:*  *For 2-step RACH in separate ROs, the following parameters (prach-RootSequenceIndex, zeroCorrelationZoneConfig, restrictedSetConfig), are separately configured for 2-step RACH. If absent, reuse the corresponding 4-step RACH parameters.*  However, in this case, *msg1-SubcarrierSpacing* is not allowed to be configured, as the SCS for msg1 will not be 15/30/60/120KHz and will be determined by PRACH format directly. According to agreement below, it implicitly (in our understanding) means the SCS of MSgA PRACH should be the same as the Msg1 PRACH, i.e. they will have same PRACH format (although the *msg1-subcarrierSpacing* is put in bracket, it doesn’t have to exist if not necessary in our understanding) :  *Agreements:*  *For separately configured ROs, the 2-step RACH MsgA PRACH SCS is indicated by the corresponding 4-step RACH parameter (msg1-subcarrierSpacing).*  According to above, we think the original wording is enough, i.e. as long as “*prach-RootSequenceIndex* L=139”, the field here is mandatory, otherwise absent.  🡪 We are ok to revise into a change in line with what ZTE proposes if it is concluded that something is needed.  Note that the text “Only the values 15 or 30 kHz (FR1), and 60 or 120 kHz (FR2) are applicable” already indicates that 839/571/1151 length PRACH will be precluded according to the PRACH format definitions in RAN1, i.e. only 139 requires one bit indication, and other cases have no confusion at all. |
| CATT | Yes | Agree but if we can mandate that the SCS of MsgA and Msg1 is always configured the same, then ZTE’s version is simpler. |
| vivo | Yes | We are okay to follow ZTE’s revision if the majority view is that the SCS of MsgA PRACH shall be the same as that of Msg1 PRACH even for the separate ROs. If this can be agreeable in RAN2, we suggest sending an LS to RAN1 for confirmation as we might revert the RAN1 agreement. |
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**Rapporteur Summary:**

11 companies participated in this question and all the companies agree with the intention of the CR but some companies have concerns on the exact wordings in the CR. Thus rapporteur beleives that the CR can be pursued in the second phase but the **change proposals in the comments need to be taken into account** (multiple companies have indicated that ZTE’s revision is better).

1. Changes in R2-2109445 are pursued in phase-2.

1. [R2-2110579](file:///D:\\Documents\\3GPP\\tsg_ran\\WG2\\TSGR2_116-e\\Docs\\R2-2110579.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_116-eDocsR2-2110579.zip) Correction on description of absoluteFrequencySSB ZTE Corporation, Sanechips CR Rel-16 38.331 16.6.0 2837 - F NR\_unlic-Core

In [3], ZTE brings up the issue of how the UE obtains the time and frequency sync for a serving cell that does not transmit any SSB. The CR proposes to update the field description of *absoluteFrequencySSB*.

|  |
| --- |
| ***absoluteFrequencySSB***  Frequency of the SSB to be used for this serving cell. SSB related parameters (e.g. SSB index) provided for a serving cell refer to this SSB frequency unless mentioned otherwise. The cell-defining SSB of the PCell is always on the sync raster. Frequencies are considered to be on the sync raster if they are also identifiable with a GSCN value (see TS 38.101-1 [15]). If the field is absent, the SSB related parameters should be absent, e.g. *ssb-PositionsInBurst*, *ssb-periodicityServingCell* and *subcarrierSpacing* in *ServingCellConfigCommon* IE. If the field is absent, the UE obtains timing reference from the SpCell or an SCell if applicable as described in [14, TS 38.133]. This is only supported in case the SCell is in the same frequency band as the SpCell. |

**Question-4: Do you agree with the changes in CR R2-2110579?**

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| --- | --- | --- |
| **Company name** | **Yes/No** | **Comments** |
| Nokia | Yes |  |
| Huawei, HiSilicon | No | At this stage we prefer rather not to make non-essential changes. |
| MediaTek | Yes |  |
| ZTE | Yes | Proponent.  We think the existing text gives the impression that this is only for SpCell which is wrong. |
| Apple | Yes |  |
| NEC | Yes | OK, but format should be modified to fit 38.331, “.. in TS 38.133 [14].“ |
| QCOM | Yes |  |
| OPPO | Yes |  |
| Ericsson | Yes, with modification | We think the change should be the following:  If the field is absent, the UE obtains timing reference from the SpCell or an SCell if applicable as described in TS 38.213, clause 4.1  [13] ~~[14, TS 38.133~~]. This is only supported in case the ~~SCell~~ serving cell is in the same frequency band as the SpCell or SCell, respectively.  What is new in Rel-16 is that if the SSB is not available on the PCell for a while, the UE is allowed to use the timing of an SCell. So changing SCell to serving cell is needed to also include the case where serving cell refers to a PCell. |
| LG | Yes | Fine with the clarification for inter-TS consistency. |
| CATT | Yes |  |
| vivo | Yes |  |
|  |  |  |

**Rapporteur Summary:**

12 companies participated in this email discussion and 11/12 companies agree with the changes. One company believes that this is a non-essential change and one company has further wording change proposal.

1. Changes in R2-2110579 are pursued in phase-2.

1. [R2-2110580](file:///D:\\Documents\\3GPP\\tsg_ran\\WG2\\TSGR2_116-e\\Docs\\R2-2110580.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_116-eDocsR2-2110580.zip) Correction on description of cp-ExtensionC2 and cp-ExtensionC3 ZTE Corporation, Sanechips CR Rel-16 38.331 16.6.0 2838 - F NR\_unlic-Core

In [4], ZTE brings up a correction based on a past agreement.

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| ***cp-ExtensionC2, cp-ExtensionC3***  Configures the cyclic prefix (CP) extension (see TS 38.211 [16], clause 5.3.1). For 15 kHz SCS, {1..28} are valid for both *cp-ExtensionC2* and *cp-ExtensionC3*. For 30 kHz SCS, {1..28} are valid for *cp-ExtensionC2* and {2..28} are valid for *cp-ExtensionC3.* For 60 kHz SCS, {2..28} are valid for *cp-ExtensionC2* and {3..28} are valid for *cp-ExtensionC3*. |

**Question-5: Do you agree with the changes in CR R2-2110580?**

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| --- | --- | --- |
| **Company name** | **Yes/No** | **Comments** |
| Nokia | Yes, but | We can merge this to rapporteur CR |
| Huawei, HiSilicon | Yes, but | Removing 30kHz seems reasonable. Agree with Nokia that this can be merged to rapporteur CR. |
| Lenovo | Yes but | Agree with others that the change can be merged into the rapporteur CR. |
| MediaTek | Yes | Agree that it can be merged. |
| ZTE | Yes | Proponent. Okay to merge. |
| Apple | Yes | Agree can be merged. |
| QCOM | Yes | Rapporteur CR is preferred |
| OPPO | Yes | Agree to merge into rapporteur CR |
| Ericsson | Yes, but ... | Agree with the change, but the cover page could be updated. The consequences are rather that the field description contains contradicting information as there are different descriptions which values are valid for 30 kHz SCS. |
| CATT | Yes | Agree that it can be merged. |
| vivo | Yes | Same view with the others above. |
|  |  |  |

**Rapporteur Summary:**

11 companies participated in this question and all companies agree with the changes and also most companies believe the changes can be merged with the rapporteur CR.

1. Changes in R2-2110580 are merged with the rapporteur CR.

1. [R2-2110697](file:///D:\\Documents\\3GPP\\tsg_ran\\WG2\\TSGR2_116-e\\Docs\\R2-2110697.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_116-eDocsR2-2110697.zip) Miscellaneous non-controversial corrections Set XII Ericsson CR Rel-16 38.331 16.6.0 2844 - F NR\_newRAT-Core, TEI16

In [5], Ericsson brings up some non-controversial changes

**Question-6: Do you agree with the changes in CR R2-2110697?**

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| --- | --- | --- |
| **Company name** | **Yes/No** | **Comments** |
| Nokia | Yes |  |
| Huawei, HiSilicon | Agree partially | - **perRAInfoListExt-v1660** is renamed in ASN.1 but not in the field description  - **ra-InformationCommon**: the proposed field description is heavily redundant with procedure text, which increases maintenance work and may introduce unnoticed small discrepancies that can lead to divergent UE behaviours. Suggest a more generic description, e.g. "The field is used to provide information on random access attempts".  - **maxNrofPUSCH-PathlossReferenceRSs-1-r16**: should be "extended minus 1" (not "minus 1 extended") |
| Lenovo | Yes but | 1. On the proposed changes:  * 5.5.5.2: in the conditions below the highlighted phrase „set to true“ should be removed.   3> if *includeBeamMeasurements* is set to *true*, include the SS/PBCH based measurement results for the quantities in *reportQuantityRS-Indexes* set to *true* for each SS/PBCH block index;  ...  3> if *includeBeamMeasurements* is set to *true*, include the CSI-RS based measurement results for the quantities in *reportQuantityRS-Indexes* set to *true* for each CSI-RS index.   * New description of ra-InformationCommon in RA-Report field descriptions: In the second sentence the word “presented” should be corrected to “present”.   This field is mandatory presented.   * Description of perRAInfoList, perRAInfoListExt-v1660 in RA-InformationCommon field descriptions: to be aligned with ASN.1 “Ext” should be removed, and “perRAInfoList (without suffix)” should be replaced by “perRAInfoList-r16”.   ***perRAInfoList, perRAInfoListExt-v1660***  This field provides detailed information about each of the random access attempts in the chronological order of the random access attempts. If perRAInfoListExt-v1660 is present, it shall contain the same number of entries, listed in the same order as in perRAInfoList (without suffix).   1. Further issues can be fixed as well:  * In SIB4: in IE InterFreqCarrierFreqInfo the need code "Need R" for field ss-RSSI-Measurement is missing. * 6.3.2 NeedForGapsInfoNR IE: To follow ASN.1 naming conventions „list“ should start with capital letter.   NeedForGapsInfoNR-r16 ::= SEQUENCE {  intraFreq-needForGap-r16 NeedForGapsIntraFreqlist-r16,  interFreq-needForGap-r16 NeedForGapsBandlistNR-r16  }  NeedForGapsIntraFreqlist-r16 ::= SEQUENCE (SIZE (1.. maxNrofServingCells)) OF NeedForGapsIntraFreq-r16  NeedForGapsBandlistNR-r16 ::= SEQUENCE (SIZE (1..maxBands)) OF NeedForGapsNR-r16   * 6.3.4 AreaConfiguration IE (related to logged measurements): need code for field cellList in IE InterFreqTargetInfo-r16 is missing. We suggest to add “Need R”. Furthermore, suffix „-r16“ should be added for the fields therein.   InterFreqTargetInfo-r16 ::= SEQUENCE {  dl-CarrierFreq ARFCN-ValueNR,  cellList SEQUENCE (SIZE (1..32)) OF PhysCellId OPTIONAL  }   * 6.4: in the comments to maxNrofP0-PUSCH-AlphaSets and maxNrofP0-PUSCH-AlphaSets-1 the cited reference “38,213” should be corrected to “TS 38.213”.   maxNrofP0-PUSCH-AlphaSets INTEGER ::= 30 -- Maximum number of P0-pusch-alpha-sets (see 38,213, clause 7.1)  maxNrofP0-PUSCH-AlphaSets-1 INTEGER ::= 29 -- Maximum number of P0-pusch-alpha-sets minus 1 (see 38,213, clause 7.1)   * 6.4: in the comment to maxNrofCandidateBeams the redundant word „that“ can be removed.   maxNrofCandidateBeams INTEGER ::= 16 -- Max number of PRACH-ResourceDedicatedBFR that in BFR config. |
| MediaTek | Yes | We also agree with the comments from Lenovo. |
| NEC | Yes | With updates based on the comments from Lenovo |
| OPPO | Yes | Comments from Lenovo are also helpful. |
| Ericsson (proponent) | Yes |  |
| CATT | Yes | We share the same with Lenovo. |
| vivo | Yes | Agree with Lenovo. |
|  |  |  |

**Rapporteur Summary:**

9 companies participated in this question and companies mostly agree with the changes. Further changes are proposed by two companies (Lenovo and Huawei) that needs to be taken into account in phase-2.

1. Changes in R2-2110697 are pursued in phase-2.

1. [R2-2110794](file:///D:\\Documents\\3GPP\\tsg_ran\\WG2\\TSGR2_116-e\\Docs\\R2-2110794.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_116-eDocsR2-2110794.zip) Extension of pathlossReferenceRSs MediaTek Inc. CR Rel-16 38.331 16.6.0 2849 - F TEI16

In [6], MediaTek brings up the issue of handling the pathLossReferenceRSs *pathlossReferenceRSs-v1610* in *PUCCH-PowerControl*. They propose changes similar to the ones agreed for the extension of *candidateBeamRSList* in the previous meeting. The proposed changes are to the field descriptions of

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| ***pathlossReferenceRSs, pathlossReferenceRSs-v1610***  A set of Reference Signals (e.g. a CSI-RS config or a SS block) to be used for PUCCH pathloss estimation. Up to *maxNrofPUCCH-PathlossReference-RSs* may be configured. If the field is not configured, the UE uses the SSB as reference signal (see TS 38.213 [13], clause 7.2). The set includes Reference Signals indicated in pathlossReferenceRSs (without suffix) and in pathlossReferenceRSs-v1610. The UE maintains *pathlossReferenceRSs* and *pathlossReferenceRSs-v1610* separately: Receiving *pathlossReferenceRSs-v1610* set to *release* releases only the entries that were configured by *pathlossReferenceRSs-v1610*, and receiving *pathlossReferenceRSs-v1610* set to *setup* replaces only the entries that were configured by *pathlossReferenceRSs-v1610* with the newly signalled entries. |

**Question-7: Do you agree with the changes in CR R2-2110794?**

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| --- | --- | --- |
| **Company name** | **Yes/No** | **Comments** |
| Nokia | Yes |  |
| Huawei, HiSilicon | Yes |  |
| Lenovo | Yes but | The following minor changes need to be made:   * The changes to the field description of candidateBeamRSList, candidateBeamRSListExt-v1610 need to be removed since they were already implemented in 38.331 V16.6.0. * Cover page: pathlossReferenceRSs-v1610 was introduced by eMIMO so WI code should be corrected to “NR\_eMIMO-Core”. |
| MediaTek | Yes (proponent) | Thanks to Lenovo for catching the copy/paste mistake and the WI code. |
| ZTE | Yes | Ok with Lenovo’s suggestions. |
| Apple | Yes |  |
| NEC | Yes |  |
| Ericsson | Yes |  |
| LGE | Yes | This is in line with what RAN2 agreed for *candidateBeamRSList.* |
| CATT | Yes | We agree with Lenovo. |
| vivo | Yes |  |

**Rapporteur Summary:**

11 companies participated in this question and all the companies agree with the changes. Further changes are proposed by Lenovo that needs to be taken into account in phase-2.

1. Changes in R2-2110794 are pursued in phase-2.

1. [R2-2110878](file:///D:\\Documents\\3GPP\\tsg_ran\\WG2\\TSGR2_116-e\\Docs\\R2-2110878.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_116-eDocsR2-2110878.zip) Correction on supportNewDMRS-Port-r16 capability Huawei, HiSilicon CR Rel-16 38.331 16.6.0 2857 - F NR\_eMIMO-Core

In [7], Huawei proposes the alignment of description in TS 38.306 and TS 38.331 for the *supportNewDMRS-Port-r16* capability. The associated changes captured in [7] are;

1. Change n0, n2 and n3 to supported, supported1n supported2.
2. Clarify that whatever the value reported for *supportNewDMRS-Port-r16* indicates UE supports the new DMRS port entry {0, 2, 3}.

**Question-8: Do you agree with the changes in CR R2-2110878?**

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| --- | --- | --- |
| **Company name** | **Yes/No** | **Comments** |
| Nokia | No | The change doesn't make sense as the original text looks fine with values in the enumeration.  The other change can be merged to rapporteur CR |
| Huawei, HiSilicon | Yes | Proponent |
| MediaTek | Maybe not | We don’t see a need to change the names. It’s true, though, that the RRC parameter doesn’t align well with the description in 38.306; we can discuss if something should be captured in the field description to clarify what the UE may set. |
| Apple | Yes | We checked with our RAN1 MIMO colleague. It’s true that the supportNewDMRS-Port-r16 was intended for UE to report supporting the the set of three values, but not for a single value from 0, 2, 3. Thus using enumerated {n0, n2, n3} is acutally not right.  In addition, the name of supportNewDMRS-Port-r16 is not very appropriate, and leads to confusions. Perhaps it can be changed to supportNewDMRS-Entry-r16. |
| QCOM | Comment | This CR pointed the issue but didn't seem to have used the right solution. The intention for supportNewDMRS-Port-r16 was for UE to indicate whether this new DMRS port entry combination is supported or not. RAN2 has implemented this Rel-16 FG in a wrong way, and hence the need for this CR.   * This should have been 1 bit capability that UE either supports or not. |
| CATT | 1) no,  2) yes | Understand the intention, but we think clarification in the field description is enough, there is no need to change the values names. |
| Ericsson | Yes, with comments | We agree with the intention of the CR.  We agree that this field should have been a single bit, and we could dummify the existing field and introduce a new.  The solution proposed in the CR is fine as compromise, in order to not impact the ASN.1 encoded bits.  Cover page should state that CR need to be implemented by both UE and nw that supports XXXX.  If we now modify the field, we could also avoid/replace the supportNewDMRS-Port-r16. In next release, there nay be an ever newer variant. |
| vivo | Partially Yes | We are fine with adding the field description. |
|  |  |  |

**Rapporteur Summary:**

8 companies participated in this question and 6/8 companies agree with the intention of the changes in the CR. Couple of companies infifcate that the associated field should have been a single bit. There are few further suggestions of the coversheet by Ericsson. Thus rapporteur believes that this CR can be further worked on in the phase-2 and the exact changes can be ironed out in phase-2.

1. Changes in R2-2110878 are pursued in phase-2.

## 3.3 LTE changes

1. [R2-2111079](file:///D:\\Documents\\3GPP\\tsg_ran\\WG2\\TSGR2_116-e\\Docs\\R2-2111079.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_116-eDocsR2-2111079.zip) SCG Overheating termination indication in EN-DC Qualcomm Incorporated, Ericsson CR Rel-16 36.331 16.6.0 4744 - F TEI16

In [8], the proponents bring up the issue of SCG overheating indication termination in EN-DC. The CR proposes to not to include overheatingAssistance-v1610 instead of overheatingAssistanceForSCG when the UE no longer experiences overheating condition.

2> else (if the UE no longer experiences an overheating condition):

3> do not include *reducedUE-Category*, *reducedMaxCCs* and *overheatingAssistance-v1610* (if configured to provide overheating assistance indication for NR SCG) in *OverheatingAssistance* IE;

1. [R2-2110725](file:///D:\\Documents\\3GPP\\tsg_ran\\WG2\\TSGR2_116-e\\Docs\\R2-2110725.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_116-eDocsR2-2110725.zip) Correction on sending SCG Overheating in EN-DC Nokia, Nokia Shanghai Bell CR Rel-16 36.331 16.6.0 4737 - F TEI16, NR\_newRAT-Core

In [9], Nokia discusses the same issue but proposes to include an empty IE.

2> else (if the UE no longer experiences an overheating condition):

3> do not include *reducedUE-Category*, *reducedMaxCCs* and provide an empty *overheatingAssistanceForSCG* (if configured to provide overheating assistance indication for NR SCG) in *OverheatingAssistance* IE;

**Question-9: Which of the following changes are agreeable with respect to SCG overheating indication termination in EN-DC?**

* **Changes in CR R2-2111079**
* **Changes in CR R2-2110725**
* **None (none of the changes as in R2-2111079 or R2-2110725)**

|  |  |  |
| --- | --- | --- |
| **Company name** | **R2-2111079 / R2-2110725 / None** | **Comments** |
| Nokia | No strong view | We have also proposal in R2-2110725, but this change is also acceptable to us in R2-2111079. |
| Huawei, HiSilicon | R2-2111079 with comments | R2-2111079 is backward compatible. However, we would like to further clarify that “do not include overheatingAssistance-v1610”, UE can implement it by not including parent IE, e.g. *UEAssistanceInformation-v1610-IEs* or *UEAssistanceInformation-v1530-IEs*, the NW can interprate both cases as “UE does not include overheatingAssistance-v1610”. We hope this can be further clarified in the CR coversheet. |
| MediaTek | Both | Both implementations seem valid and should be understood by the network to mean “no longer overheating”. This could be specified as:  3> do not include *reducedUE-Category*, *reducedMaxCCs*, ~~and~~or any content of *overheatingAssistanceForSCG*…  --perhaps with a NOTE clarifying that the UE may either omit the parent IE or send the field empty. |
| ZTE | No strong view | From network perspective, we think both CRs are fine.  But should we check the current UE implementation? Or as MediaTek said, we can specify that both are potential UE behaviours. |
| Apple | Prefer R2-2111079 | This is more backward compatible. For R2-2110725, we are afraid it may lead to some potential issue with regards to how to interpret the absence of one overheating parameter. |
| NEC | R2-2111079 | We prefer to go with 11079. |
| QCOM | No strong view | Although we’re the proponent for R2-2111079, but we’re open to go with both as suggested by MediaTek. |
| Ericsson | R2-2111079 | With R2-2110725 the MN may not know that the overheating condition is over on the SCG side (only if it inspects overheatingAssistanceForSCG, which is not required to do), hence we think R2-2111079 is a cleaner approach. |
| LG | **R2-2111079** | The changes in R2-2111079 is a reasomable work around to avoid NBC somehow. |
| CATT | No strong view | Either is fine, respect to majority view. |
| vivo | R2-2111079 | It is clearer. |
|  |  |  |

**Rapporteur Summary:**

11 companies participated in this question and all companies agree with the changes. Most companies have shown preference for R2-2111079.

1. Changes in R2-2111079 are pursued in phase-2.

# 4 Conclusion

The following proposals are made in section 3.

[**Proposal 1 RAN2 agrees that based on the current specifications, it is not clear whether the measurement configurations from both the MN and the SN can contain the *interFrequencyConfig-NoGap-r16* filed in the NR-DC scenario. Besides, UE’s corresponding behaviour for performing inter-frequency no gap measurement is also ambiguous.**](#_Toc86926655)

[**Proposal 2 Only MN controls the inter-frequency measurement without gaps ((interFrequencyConfig-NoGap-r16)) feature.**](#_Toc86926656)

[**Proposal 3 interFrequencyConfig-NoGap-r16 provided by MN applies to all the inter-frequency measurements configured by MN and SN**](#_Toc86926657)

[**Proposal 4 CR based on Proposal 2 and Proposal 3 is pursued in phase-2.**](#_Toc86926658)

[**Proposal 5 RAN2 to further discuss the following aspects.**](#_Toc86926659)

[**a. Whether SN needs to be notified of interFrequencyConfig-NoGap-r16 via INM (CG-ConfigInfo)?**](#_Toc86926660)

[**b. Can SN request MN to configure interFrequencyConfig-NoGap-r16 (CG-Config)?**](#_Toc86926661)

[**Proposal 6 Changes in R2-2109445 are pursued in phase-2.**](#_Toc86926662)

[**Proposal 7 Changes in R2-2110579 are pursued in phase-2.**](#_Toc86926663)

[**Proposal 8 Changes in R2-2110580 are merged with the rapporteur CR.**](#_Toc86926664)

[**Proposal 9 Changes in R2-2110697 are pursued in phase-2.**](#_Toc86926665)

[**Proposal 10 Changes in R2-2110794 are pursued in phase-2.**](#_Toc86926666)

[**Proposal 11 Changes in R2-2110878 are pursued in phase-2.**](#_Toc86926667)

[**Proposal 12 Changes in R2-2111079 are pursued in phase-2.**](#_Toc86926668)