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%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110982.zip), [R2-2109445](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109445.zip), [R2-2110579](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110579.zip), [R2-2110580](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110580.zip), [R2-2110697](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110697.zip), [R2-2110794](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110794.zip), [R2-2110878](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110878.zip), [R2-2111079](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2111079.zip), [R2-2110725](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110725.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:

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| --- | --- |
| Company | Contact: Name (E-mail) |
| Nokia | amaanat.ali@nokia.com |
| Huawei, HiSilicon | Lili Zheng (zhenglili4@huawei.com) |
| Lenovo | Hyung-Nam Choi (hchoi5@lenovo.com) |
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# 3 Discussion

## 3.1 RRM and Measurements

1. [R2-2110982](file:///D%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_116-e%5C%5CDocs%5C%5CR2-2110982.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_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. |
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**Rapporteur Summary:**

To be added later

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.**

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| **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 |  |
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**Rapporteur Summary:**

To be added later

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%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_116-e%5C%5CDocs%5C%5CR2-2109445.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_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*.

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| ***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. |
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**Rapporteur Summary:**

To be added later

1. [R2-2110579](file:///D%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_116-e%5C%5CDocs%5C%5CR2-2110579.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_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*.

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| ***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. |
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**Rapporteur Summary:**

To be added later

1. [R2-2110580](file:///D%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_116-e%5C%5CDocs%5C%5CR2-2110580.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_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. |
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**Rapporteur Summary:**

To be added later

1. [R2-2110697](file:///D%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_116-e%5C%5CDocs%5C%5CR2-2110697.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_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-r16NeedForGapsBandlistNR-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. |
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**Rapporteur Summary:**

To be added later

1. [R2-2110794](file:///D%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_116-e%5C%5CDocs%5C%5CR2-2110794.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_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”.
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**Rapporteur Summary:**

To be added later

1. [R2-2110878](file:///D%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_116-e%5C%5CDocs%5C%5CR2-2110878.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_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 |
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**Rapporteur Summary:**

To be added later

## 3.3 LTE changes

1. [R2-2111079](file:///D%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_116-e%5C%5CDocs%5C%5CR2-2111079.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_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%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_116-e%5C%5CDocs%5C%5CR2-2110725.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_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)**

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| --- | --- | --- |
| **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. |
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**Rapporteur Summary:**

To be added later

# 3 Conclusion

To be added later.