**3GPP TSG RAN Meeting #101 RP-23xxxx**

**Bangalore, India, September 11-15, 2023**

## Status Report to TSG

**Agenda item:** 9.3.1.7

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **WI / SI Name** | Enhanced support of reduced capability NR devices | | | | |
| included in this status report | Study Item:  No | Core part:  Yes | Performance part:  Yes | | Testing part:  No |
| **Acronym** | NR\_redcap\_enh | | | | |
| **Unique ID** | 970080 | | | | |
| **TSG Tdoc of latest approved WI/SI description (if any)** | [RP-223544](https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_98e/Docs/RP-223544.zip) | | | | |
| **Target Completion Date**  **(indicate if changed)** | Study Item: | Core part: 12/2023 | Performance part: 06/2024 | Testing part: | |
| **Overall Completion level** | Study Item: | Core part:  75% (RAN#99: 55%)  RAN1: 100% | Performance Part: 0% (RAN#99: 0%) | Testing part: | |

**Source:**

|  |  |  |
| --- | --- | --- |
| **Leading WG** | | RAN1 |
| **Rapporteur** | **Name** | Johan BERGMAN |
| **Company** | Ericsson |
| **Email** | [johan.bergman@ericsson.com](mailto:johan.bergman@ericsson.com) |

## 1 Work plan related evaluation

|  |  |
| --- | --- |
| **Do you want to modify the time budget for this WI/SI compared to what was endorsed at the last RAN meeting?** | No |

## 2. Detailed progress in RAN WGs since last TSG meeting

## 2.1 RAN1

#### 2.1.1 Agreements

##### 2.1.1.1 RAN1#114

To this meeting, 35 contributions were submitted, plus 19 contributions on the UE feature list (for details see agenda items 9.6 and 9.16.8 in [Tdoc list](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Docs/TDoc_List_Meeting_RAN1%23114.xlsx))

RAN1 carried out the following email discussions (with documents and agreements listed further down):

* [114-R18-RedCap], captured in [R1-2308227](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Docs/R1-2308227.zip)
* [114-R18-UE\_features-01], captured in [R1-2308503](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Docs/R1-2308503.zip)

After the meeting,

* An updated RAN1 agreement summary was provided by the rapporteur in [R1-2308228](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Docs/R1-2308228.zip).
* An LS on peak rate reduction was sent to RAN2 (cc RAN4) in [R1-2308610](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Docs/R1-2308610.zip).
* An LS on UE features was sent to RAN2 and RAN3 in [R1-2308523](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Docs/R1-2308523.zip).

RAN1 made the following agreement related to **UE BB bandwidth reduction**:

|  |
| --- |
| **MsgB bandwidth and 2-step RACH timeline**  Agreement:  For UE BB bandwidth reduction, for 2-step RACH, assuming that MsgA PUSCH indication is transmitted:   * The same timeline relaxation as for the Msg2-Msg3 timeline (i.e., 1 slot for Msg2 PDSCH larger than 25 PRBs for 15 kHz SCS and 12 PRBs for 30 kHz SCS) applies at least for the following cases:   + Case 2c: Between reception of MsgB PDSCH scheduled by MSGB-RNTI in which UE does not correctly receive the transport block in the corresponding PDSCH within the window and transmission of only PRACH according to Type-1 random access procedure or to transmit both PRACH and PUSCH according to Type-2 random access procedure.   + Case 2d: Between reception of MsgB PDSCH scheduled by MSGB-RNTI with RAPID which is not associated with the corresponding PRACH transmission from the UE and transmission of only PRACH according to Type-1 random access procedure or to transmit both PRACH and PUSCH according to Type-2 random access procedure.   **Simultaneous reception**  Conclusion:  For UE BB bandwidth reduction, for Msg4 PDSCH scheduled by TC-RNTI during a process of autonomous SI acquisition, no specification change.  Agreement:   * For handling of multiple reception in a slot during P-RNTI triggered SI acquisition when the total number of PRBs for the PDSCH scheduled with SI-RNTI and the PDSCH scheduled with C-RNTI, MCS-C-RNTI, or CS-RNTI scheduled in the slot is larger than the maximum number of PRBs that the UE can process per slot, the UE may skip decoding of the scheduled PDSCH with C-RNTI, MCS-C-RNTI, or CS-RNTI.   Agreement:   * For UE BB bandwidth reduction, when PDSCH scheduled with RA-RNTI or MSGB-RNTI is not greater than 25/12 PRBs with 15/30kHz SCS, 38.214 clause 5.1 still applies, i.e.:   + “The UE is not expected to decode a PDSCH scheduled with C-RNTI, MCS-C-RNTI, G-RNTI for multicast or broadcast, MCCH-RNTI, G-CS-RNTI or CS-RNTI if another PDSCH in the same cell scheduled with RA-RNTI or MSGB-RNTI partially or fully overlap in time.”   Agreement:   * For UE BB bandwidth reduction, when PDSCH scheduled with RA-RNTI or MSGB-RNTI is greater than 25/12 PRBs with 15/30kHz SCS, support the following UE behavior:   + UE behavior 2: Relaxed random access processing timeline in connected mode:     - The UE is not expected to decode a PDSCH scheduled with C-RNTI, MCS-C-RNTI, G-RNTI for multicast or broadcast, MCCH-RNTI, G-CS-RNTI or CS-RNTI in the same or next slot if another PDSCH in the same cell is scheduled with RA-RNTI or MSGB-RNTI.   **MBS bandwidth**  Agreement:   * For UE BB bandwidth reduction, the number of PRBs scheduled in DCI can be larger than 25 PRBs for 15 kHz SCS and 12 PRBs for 30 kHz SCS for:   + Broadcast MBS PDSCH without any PDSCH in next slot   + Broadcast MBS PDSCH without MBS PDSCH repetition |

RAN1 made the following agreement related to **UE peak data rate reduction**:

|  |
| --- |
| Agreement:   * The UE needs to signal peak data rate 10-Mbps related parameters corresponding to *vLayers*, *Qm* and *f*.   + No new values for the above parameters will be introduced for Rel-18 eRedCap.   + For FG 48-2, when *vLayers* = 2, the peak rate target corresponds to a *vLayers*·*Qm*·*f* of 0.8 (instead of 0.75).   Conclusion:   * For Rel-18 eRedCap UEs, the following features are still supported as optional features:   + 2 Rx branches with DL MIMO   + DL 256QAM   Agreement:   * Send LS to RAN2 (cc RAN4) to inform about RAN1 agreements on peak rate reduction with 38.306 impact.   Agreement:  Draft LS [R1-2308609](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Docs/R1-2308609.zip) is endorsed in principle by removing all “or band combination”.  Agreement:  Final LS [R1-2308610](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Docs/R1-2308610.zip) is endorsed. |

#### 2.1.2 Remaining Open issues

No remaining RAN1 issues

## 2.2 RAN2

#### 2.2.1 Agreements

##### 2.2.1.1 RAN2#123

To this meeting, 52 contributions were submitted (for details see agenda item 7.19 in [Tdoc list](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123/Docs/TDoc_List_Meeting_RAN2%23123.xlsx)).

RAN2 made the following agreements related to **enhanced eDRX in RRC\_INACTIVE**:

|  |
| --- |
| * There NRAN PTW can be shorter, equal to, or longer than the CN PTW * When enhanced INACTIVE eDRX is used, RAN2 to confirm that UE in RRC\_INACTIVE state shall:  1. During CN PTW, use the same i\_s as for RRC\_IDLE state. 2. Outside CN PTW and within RAN PTW, use the i\_s for RRC\_INACTIVE state. 3. Outside CN PTW and outside RAN PTW, no PO will be monitored and no i\_s will be used.  * When enhanced INACTIVE eDRX is used, RAN2 to confirm that:  1. Outside CN PTW and within RAN PTW, the SubgroupID is also same as the SubgroupID used inside CN PTW. 2. Outside CN PTW and outside RAN PTW, no PO will be monitored and no SubgroupID will be used. |

RAN2 made the following agreements related to **further reduced UE complexity in FR1**:

|  |
| --- |
| Early indication:   * Additional (on top of RedCap) early indication in MsgA PRACH is not supported. * Add a new value “enhRedCap-r18” in FeatureCombination-r17 * One FeatureCombination-r17 should not set both redCap-r17 and enhRedCap-r18 as true * Network should ensure the target gNB supports/allows eRedcap UE, in the handover of eRedCap UE. * Working assumption: No need to have separate cell barring for “eRedCap UE capable of 20MHz + PR1” and “eRedCap UE capable of BW3/PR3+ PR1”.   Capability definition:   * The support of Rel-18 eRedCap (FG 48-1 and 48-2) is defined as independently of Rel-17 RedCap (FG 28-1) understanding that RAN1 also agreed that UE supporting Rel-18 eRedCap feature(s) indicate support of this FG 48-1 instead of FG 28-1 (supportOfRedCap-r17). * New UE capability (referred e.g., as supportOfEnhancedRedCap-r18) is defined to capture FG 48-1 (i.e., RedCap UE with reduced peak data rate and reduced baseband bandwidth in FR1) with the corresponding details explained in RAN1 feature list ([R1-2306223](http://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_113/Docs/R1-2306223.zip)). * New UE capability (referred e.g., supportOfNotReducedBB-BW-r18) is defined to capture FG 48-2 (i.e., RedCap UE with reduced peak data rate without reduced baseband bandwidth in FR1) with the corresponding details explained in RAN1 feature list ([R1-2306223](http://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_113/Docs/R1-2306223.zip)). * To remove from RAN2 running Capability CRs any reference to supportOfEnhancedRedCap-r18 as it is part of RAN1 feature list and its corresponding TP should be captured as part of Mega-Capability CRs. If so, to agree to the update done on UE capabilities running CR to 38.306 and 38.331 in [R2-2307657](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123/Docs/R2-2307657.zip) and [R2-2307659](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123/Docs/R2-2307659.zip). * We will create a temporary CR for RAN1 eRedCap features. * To add in the list of functional components for the supportOfEnhancedRedCap-r18 the support of eRedCap early indication based on Msg3 and MsgA PUSCH. * A Rel-18 eRedCap UE (both FG 48-1 and FG 48-2) can also support all RAN2-centric Rel-17 RedCap UE capabilities in the same manner. * Discuss during CR implementation how to capture this in TS 38.306: option 1) add in the field description of R18 eRedCap capability (i.e. supportOfEnhancedRedCap-r18) the following statement “all supportOfRedCap-r17 related capabilities specified in this specification remain applicable for Rel-18 RedCap UEs, unless indicated otherwise” or option 2) update the field description of the RAN2-centric Rel-17 RedCap UE capabilities to be applicable to (e)RedCap UEs. * To include the following in “section 4.2.x.1 Definition of eRedCap UE” of TS 38.306:   eRedCap UE is the UE with reduced peak data rate and, with or without reduced baseband bandwidth in FR1:  The maximum bandwidth is 20 MHz for FR1. UE features and corresponding capabilities related to UE bandwidths wider than 20 MHz in FR1 are not supported by eRedCap UEs. eRedCap UEs do not support operation in FR2.  The specifications and capabilities of a RedCap UE are also applicable to eRedCap UEs unless stated otherwise.   * Section 4 on “Supported max data rate for DL/UL” in TS 38.306 needs to be updated to include RAN1 agreement on the new value(s) of X for which the legacy constraint “vLayers·Qm·f ≥ 4” is relaxed by capturing the following TP: “For single carrier NR SA operation, the UE (except a UE indicating supportOfERedCap-r18) shall support a data rate for the carrier that is no smaller than the data rate computed using the above formula, with J=1 CC and component vLayers(j)⋅Qmj⋅fj is no smaller than 4. For UE indicating supportOfEnhancedRedCap-r18 in single carrier NR SA operation, the UE shall support a data rate for the carrier that is no smaller than the data rate computed using the above formula, with J=1 CC and component vLayers(j)⋅Qmj⋅fj is no smaller than 0.75 if UE does not indicate supportOfNotReducedBB-BW-r18 or 3.2 if UE also indicates supportOfNotReducedBB-BW-r18.”).   Msg2/Msg4 exceeding UE capability:   * We try to implement the RAN1 agreement referred in the Samsung paper [R2-2307170](http://www.3gpp.org/ftp//tsg_ran/WG2_RL2/TSGR2_123/Docs//R2-2307170.zip) (by adding a note in MAC), if we identify issues in MAC due to the RAN1 agreement we can revisit this discussion next meeting. * A eRedCap UE considers the contention resolution not successful and stop the ra-ContentionResolutionTimer, when the UE detects a PDCCH transmission addressed to its TEMPORARY\_C-RNTI with a DCI that schedules a Msg4 PDSCH transmission with a larger bandwidth than it can receive or process, i.e. option 1 is adopted. * We will send an LS to RAN1 since there is cross-layer interaction with the approach of stopping the timer. |

#### 2.2.2 Remaining Open issues

Remaining RAN2 aspects for the following objectives:

* Enhanced eDRX in RRC\_INACTIVE (>10.24s)
* Further reduced UE complexity in FR1
  + UE BB bandwidth reduction
  + UE peak data rate reduction

## 2.3 RAN3

#### 2.3.1 Agreements

##### 2.3.1.1 RAN3#121

To this meeting, 21 contributions were submitted (for details see agenda item 21 in [Tdoc list](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/TDoc_List_Meeting_RAN3%23121.xlsx)). A work plan was provided by the rapporteur in [R3-234271](https://www.3gpp.org/ftp/TSG_RAN/WG3_Iu/TSGR3_121/Docs/R3-234271.zip).

A summary of offline discussion is available in [R3-234535](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/R3-234535.zip) with full list of agreements. The following TPs were agreed:

* [R3-234564](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/R3-234564.zip), (TP to TS 38.413) Correction on DL Data Notification procedure name
* [R3-234565](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/R3-234565.zip), (TP for 38.410) Correction on DL Data Notification procedure name
* [R3-234572](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/R3-234572.zip), (TP for TS 38.300) Update of procedure name
* [R3-234566](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/R3-234566.zip), (TP for TS 38.413) Addressing issues in MT Communication Handling procedure
* [R3-234567](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/R3-234567.zip), (TP to 38.423) Introduction of RRC Inactive long eDRX
* [R3-234729](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/R3-234729.zip), (TP to 38.473) Introduction of RRC Inactive long eDRX
* [R3-234569](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/R3-234569.zip), (TP to 38.423) Introduction of eRedCap broadcast information
* [R3-234570](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/R3-234570.zip), (TP to 38.473) Introduction of eRedCap broadcast information and NR eRedCap early Indication

RAN3 sent a reply LS to SA2 in [R3-234725](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/R3-234725.zip) on Rel-18 RedCap enhancements to address remaining ENs in TS 23.502 and to inform of RAN3 progress.

#### 2.3.2 Remaining Open issues

Remaining RAN3 aspects for the following objectives:

* Enhanced eDRX in RRC\_INACTIVE (>10.24s)
* Other issues related to support of eRedCap

## 2.4 RAN4

#### 2.4.1 Agreements

##### 2.4.1.1 RAN4#108

To this meeting, 26 contributions were submitted (for details see agenda item 8.31 in [Tdoc list](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_108/Docs/TDoc_List_Meeting_RAN4%23108.xlsx)).

RAN4 made the following agreements related to RF requirements for **further reduced UE complexity in FR1** ([R4-2314744](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_108/Docs/R4-2314744.zip)):

|  |
| --- |
| Issue 1-1-1: New FRC for maximum input level test (for 64QAM)   * Proposals:   + Option 1: change the RB size but keep MCS no changed, applied to both eRedCap UE type   + Option 2: change MCS to 22, keeping RB size of 25   + Option 3: (Oppo) RAN1 still needs to define the parameters (vLayers, Qm, f) and after that we can further check the FRC definition. * Agreement:   + Change the RB size but keep MCS no changed, applied to both eRedCap UE type, FFS on the TBS size and RB size.   Issue 1-1-2: New DL FRC ( for QPSK)   * Proposals:   + Option 1: The change only for eRedCap (BW3/PR3 + PR1)     - (Nokia)       * Proposal 5: Table A.3.2.2-1 shall be changed to use 25 PRBs for 10, 15, and 20 MHz columns.       * Proposal 6: Table A.3.2.2-2 shall be changed to use 12 PRBs for 5, 10, 15, and 20 MHz columns.       * Proposal 9: Table A.3.3.2-1 shall be changed to use 25 PRBs for 10, 15, and 20 MHz columns.       * Proposal 10: Table A.3.3.2-2 shall be changed to use 12 PRBs for 5, 10, 15, and 20 MHz columns.     - (Huawei)       * New DL FRC (25RB, 15 kHz SCS) for 10, 15, 20MHz and (12RB, 30 kHz SCS) for 10, 15, 20MHz can be introduced in A3.2.2, A3.2.3 and A3.2.4 for FDD and in A3.3.2, A3.3.3 and A3.3.4 for TDD to support Rx requirements test for Rel18 eRedCap BW3/PR3 + PR1 UE. * Agreement:   + Use Option 1 as baseline and further check the values.   Issue 1-2-1: REFSENS of eRedcap UE (BW3/PR3 + PR1) for wider channel BW (FDD band)   * Agreement:   + 25 contiguous RB placed in middle of channel BW both in UL and DL for both HD-FDD and FDD     - where both UL and DL allocations are following the RedCap UE 5MHz REFSENS configurations and located at the center of the channel BW.     - UL RB size follow the 5MHz UL configuration table.     - Add the note or send LS to RAN5 to clarification the applicability for testing.   + The 5MHz requirements are applicable for all the channel bandwidths.   + For some bands which has less duplex distance, the additional relaxation factor is not excluded.   Issue 1-2-2: REFSENS of eRedcap UE (BW3/PR3 + PR1) for wider channel BW (TDD band)   * Proposals:   + Option 1: (Ericsson, Apple, Nokia, Xiaomi)     - *For TDD bands, the REFSENS requirements currently specified for RedCap UE at 5MHz channel BW can be directly applied to eRedCap UE for all RF channel BWs up to 20MHz, including both 2Rx and 1Rx requirements.*     - *For TDD bands with minimum channel bandwidth at 10MHz, the REFSENS requirements for eRedCap UE can be scaled by the DL PRB ratio between eRedCap UE and RedCap UE at 10MHz channel bandwidth.* * Agreement:   + Agree on Option 1.   Issue 1-3-3: UL/DL configuration of eRedcap UE (BW3/PR3 + PR1) for REFSESN for wider channel BW (TDD band)   * Proposals:   + Option 1: (Nokia) Same PRB allocation scheme can be used for testing REFSENS for TDD as agreed for FDD bands. * Agreement:   + Agree on Option 1.   Issue 1-3-1: Other Rx requirements than REFSENS   * Agreement:   + Reuse the legacy requirement, UL/DL configuration, i.e., RB allocation, following the REFSENS definition in Issue 1-2-1 |

RAN4 made the following agreements related to RRM requirements for **enhanced eDRX in RRC\_INACTIVE** for eDRX cycle > 10.24 seconds in FR1 and FR2 ([R4-2314372](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_108/Docs/R4-2314372.zip)):

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| When to measure when configured with both IDLE and INACTIVE eDRX configurations larger than 10.24s and when the PTWs are partially overlapping for serving cell measurements:   * RAN4 requirements are defined under an assumption that UE performs measurements within RAN PTW duration.   When to measure when configured with both IDLE and INACTIVE eDRX configurations larger than 10.24s and when the PTWs are partially overlapping for neighbour cell measurements:   * RAN4 requirements are defined under an assumption that UE performs measurements within RAN PTW duration.   When to measure when configured with both IDLE and INACTIVE eDRX configurations larger than 10.24s and when the PTWs are non-overlapping (not-coinciding) for serving cell measurement:   * UE measures following INACTIVE eDRX cycle.   When to measure when configured with both IDLE and INACTIVE eDRX configurations larger than 10.24s and when the PTWs are non-overlapping (not-coinciding) for neighbour cell measurement:   * RAN4 requirements are defined under an assumption that UE performs measurements within RAN PTW duration.   How to define requirements when configured with both IDLE and INACTIVE eDRX configurations larger than 10.24s and when the PTWs are partially overlapping for serving cell measurements:   * Serving cell measurement is performed at least every T, and T can be referred to RAN2 definition in TS38.304.   How to define requirements when configured with both IDLE and INACTIVE eDRX configurations larger than 10.24s and when the PTWs are partially overlapping for neighbour cell measurements:   * UE performs neighbour cell measurement based on the RAN configured DRX cycle within inactive PTW (i.e., RAN PTW).   How to define requirements when configured with both IDLE and INACTIVE eDRX configurations larger than 10.24s and when the PTWs are non-overlapping (not-coinciding) for serving cell measurement:   * Serving cell measurement is performed at least every T, and T can be referred to RAN2 definition in TS38.304.   How to define requirements when to measure when configured with both IDLE and INACTIVE eDRX configurations larger than 10.24s and when the PTWs are non-overlapping (not-coinciding) for neighbour cell measurement:   * UE performs neighbour cell measurement based on the RAN configured DRX cycle within inactive PTW (i.e., RAN PTW).   Transition requirements:   * Define requirement for the transition between short INACTIVE eDRX (≤10.24sec) and long INACTIVE eDRX (≥20.48sec) for at least the following cases:   + Case 1: transition between short INACTIVE eDRX (≤10.24sec) and long INACTIVE eDRX(≥20.48sec) within same cell   + Case 2: UE moves from a cell that supports and configures Rel-18 INACTIVE eDRX to a cell that supports only Rel-17 INACTIVE eDRX and vice versa. * FFS whether to reuse legacy requirements or introduce new requirements.   The following work split for change request (CR) work was agreed:   |  |  |  | | --- | --- | --- | |  | **Type of requirements** | **Vounteer company** | | 1 | Measurement and evaluation of serving cell measurements | MTK | | 2 | Measurements of intra-frequency NR cells | Ericsson | | 3 | Measurements of inter-frequency NR cells | Apple | | 4 | Measurements of inter-RAT E-UTRAN cells | Huawei | |

#### 2.4.2 Remaining Open issues

Core part:

* Define RRM requirements for enhanced eDRX in RRC\_INACTIVE (>10.24s)
* Define RF requirements for further enhanced UE complexity in FR1 (for details see WF in [R4-2314744](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_108/Docs/R4-2314744.zip))

Performance part:

* Specify necessary performance requirements, measurement accuracy requirements and test cases.

## 3. Detailed progress in SA/CT WGs since last TSG meeting

## 3.1 SAx/CTs

#### 3.1.1 Agreements with cross-TSG impacts

See RAN2 and RAN3 agreements in sections 2.2.1 and 2.3.1 of this status report.

#### 3.1.2 Remaining Open issues with cross-TSG impacts

The WI objective on enhanced eDRX in RRC\_INACTIVE requires SA2, CT1 and CT4 involvement.

## 4. References

RAN1#114

35 contributions (for details see agenda item 9.6 in [Tdoc list](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Docs/TDoc_List_Meeting_RAN1%23114.xlsx))

19 contributions on the UE feature list (for details see agenda item 9.16.8 in [Tdoc list](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Docs/TDoc_List_Meeting_RAN1%23114.xlsx))

RAN2#123

52 contributions (for details see agenda item 7.19 in [Tdoc list](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_123/Docs/TDoc_List_Meeting_RAN2%23123.xlsx))

RAN3#121

21 contributions (for details see agenda item 21 in [Tdoc list](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_121/Docs/TDoc_List_Meeting_RAN3%23121.xlsx))

RAN4#108

26 contributions (for details see agenda item 8.31 in [Tdoc list](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_108/Docs/TDoc_List_Meeting_RAN4%23108.xlsx))