Guidelines for Rel-18 36.331 and 38331 ASN.1 review

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# Revision History

- First version of Rel-18 Guideline

r1 Added new section “Review execution” with additional information, e.g. on the role of the RRC **WI CR editor**.
Deleted Class 0 Step 6 (no check-in mail need to be sent on RAN2 reflector for Class 0 issues).
Added company codes for China Unicom and Toyota ITC.

R2 Modified bullet 4 in “Review Exevcution”, to avoid multiple tdocs on same RIL.
Added NEC and ASUSTek in Companny id table

r3 Advice to avoid [] in RIL comments.
Added status field Duplicate.
WI CR editors to submit WI RIL List to RAN2 meeting.
Added company codes for CMCC.

# General

We will use this FTP folder to store files in this review.

<https://www.3gpp.org/ftp/Email_Discussions/RAN2/%5BMisc%5D/ASN1%20review/Rel-18%202024-03>

The review will be run by companies inserting their review comments directly into the TS3x.331 Review files:

* Companies may insert new RILs for identified issues/problems.
* Companies may insert comments on existing RILs, e.g. to indicate alternative solutions.

Typically, each WI RRC CR rapporteur is expected to provide a “WI CR” with corrections for the RILs related to the WI. Companies that identified RILs are encouraged to cooperate offline with the WI RRC CR rapporteur. For RILs that impact multiple Wis, we will decide on case by case on CR to correct the issue.

# RILs

## RIL template

RILs shall be inserted into the Review file following this layout:

**[RIL]**: Xxyz **[Delegate]**: <Company name (Delegate name)> **[WI]**: **[Class]**: **[Status]**: ToDo **[TDoc]**: None **[Proposed Conclusion]**:

**[Description]**:

**[Proposed Change]**:

**[Comments]**:

## Inserting a RIL into the review file

We will use Word Comments in the “balloon” format. You can insert a RIL in principle by using either of the methods below:

1. Use “Insert a Comment”
	1. Ensure your User Name is set to <Company name (Delegate name)>, e.g. Ericsson (Håkan).
	2. At the point to insert the comment, use New Comment button to insert a new comment.
	3. Paste the RIL template into the comment.
	4. Fill in the fields as described below. Example here.
	5. Do **not** mark several words, sentences, paragraphs like this. Just use a single insertion point, as above for E123. It happens multiple RILs need to be inserted e.g. in the same paragraph.
	6. It is **essential** that the RIL template with all fields, square brackets, colons etc are followed exactly as in the template above. We will use a macro to extract RILs to XL file. Deviations from the RIL template may result in that this macro fails.
2. Use the Word macro named “RILAddComment”.
	1. The macro creates a Word Comment with RIL fields to be filled in.
	2. Guidelines on macros is provided in this document:

ftp://ftp.3gpp.org/Email\_Discussions/RAN2/%5BMisc%5D/ASN1%20review/RIL-Macro%20and%20instructions.docx

We will NOT use the Word comment features “Reply” or “Resolve” in this review activity (you find them if you hoover with the cursor over the Word Comment). Companies are asked to provide their comments on RILs in the [Comments] field, “inside” the Word “balloon” comment.

## How to fill in the RIL fields

**[RIL]**: Number allocated by the company, **one letter + 3 digits**, e.g “E123”.

Ensure the number is unique for the company.
See company codes below.
If you have user name set to “Ericsson (Håkan)”, the macro will fill in “Exyz”, and you should add your number.

**[Status]**: ToDo

The macro sets the Status to ToDo.
Do **not** **change** this value.
The Status field will later be set to other values by the Rapporteur, to reflect the status of the RIL.

**[Delegate]**: Shall be set to <Company name (Delegate name)> (to e.g. allow easy trace the responsible Delegate). This field is automatically filled in by the macro to the User Name setting.

**[Class]**: Shall be set by the Delegate to value 1 or 2 (Class 0 issues are collected in separate file).

|  |  |
| --- | --- |
| Class 0: Expected correction has no functional impact | - Typo, minor wording improvement etc.  - ASN.1 field not following naming rules (e.g. incorrect suffix, capitalization, etc).These minor corrections are not collected as RIL in Review file, but in separate word document, see below. |
| Class 1: Expected correction has functional impact but does not affect successful RRC PDU decoding | - Incorrect/incomplete procedure textIncorrect/incomplete field description- Unsuitable need code (e.g. Need M should be replaced with Need R) |
| Class2: Expected correction affects successful RRC PDU decoding | - Change a field from optional to mandatory or vice versa- Change of the structure of an IE- Addition of extension marker within an IE |

**[TDoc]:** Add Tdoc number (or just “R2-24xxxxx” if no tdoc number yet allocated allocated) if the issue needs to be described and the solution is presented in separate Tdoc.

If you know already now that you will provide text proposal (tdoc with TP or CR) to resolve the issue, you can say this in **Description part**, and add “R2-24xxxxx” in the Tdoc field**.**

**[WI]:**

* **Always fill in this field!**
* One way to identify the related work item is by identifying the related CR in the Draft version of the spec here: <https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/Specifications/202312_draft_specs_after_RAN_102>
* **Single WI code** for single-WI issue, see table below.
	+ Correction to be captured in WI-specific CR.
	+ If needed, discussed in RAN2 meeting WI session (agenda point).
* **Multiple WI codes, e.g. “WI1, WI2”, in alphabetical order**
	+ Used if few WIs are easily identified.
	+ Correction to be captured in general “Gen ASN1 CR” (or other CR upon decision)
	+ To be decided later on a RIL by RIL basis if discussed in WI session(s) or General ASN.1 session.
* **MULTI** for issue affecting multiple WIs.
	+ Indicate the concerned WIs in Description field, if applicable.
	+ Correction to be captured in general “Gen ASN1 CR” (or other CR upon decision)
	+ To be decided later on a RIL by RIL basis if discussed in WI session(s) or General ASN.1 session
* **GEN** for ASN.1 general issue related to single WI or multiple WIs
	+ To be used for issues that need ASN.1 experts to conclude e.g. when
		- Guidelines are missing or cannot be applied
		- Existing solutions in RRC on similar issues cannot be re-used
		- Relates to future evolution of the specification
	+ Correction to be captured in general “Gen ASN1 CR” (or other standalone CR upon decision), or WI-specific CR (if related to specific WI, and Rapporteur later modifies WI code from GEN to a WI-code).
	+ If needed, discussed in RAN2 meeting General ASN.1 session (agenda point).

**[Description]:** Describe the issue in one line, as a “title”.

**[Proposed Change]:** Describe the problem and solution.
Other company may add alternative solution (preceded by company identifier/name, e.g., Ericsson-Håkan). Do not modify text entered by other companies.
Avoid using square brackets [].

**[Comments]:** Comments added by other companies (preceded by company identifier/name, e.g., Ericsson-Håkan). Do not modify text entered by other companies.
Avoid using square brackets [].

**[Proposed Conclusion]:** We do not use this field for a “proposed conclusion”. Use this field to indicate the vX value of the new version of the Review file that you will upload. This allows us all to detect recent updates to each RIL in the review file easier.

# Review execution

This section provides some further guidance on how the review is executed:

1. Typically, the company that introduces the RIL (**RIL source company**) is the RIL leader.
2. The RIL source company is encouraged to provide a sketch on solution in the RIL field [Proposed Change]
3. The RIL source company indicates in the RIL whether the solution is expected to be
	1. Captured in WI CR (most common case)
		1. [Tdoc] field is left empty.
		2. **WI CR editors** are expected monitor the review file for RILs of the WI.
	2. Specific tdoc is needed for the solution (only for more complicated cases).
		1. RIL source company adds “R2-24xxxxx” to the RIL field [Tdoc]
4. Companies that have concern on the solution of a RIL should enter comments in the RIL [Comments] field, and they should offline contact the RIL source company.
Other companies will recognize there is an offline discussing that they can hook on to, and they may (but need not) put own comment in the RIL.
Coordination will happen in offline mail thread (with draft documents stored in ftp folder if needed). This discussion should also include the WI CR editor.
	1. Outcome of this offline discussion could be
		1. Correction is captured in WI CR (most common case)
		2. Specific tdoc is needed (in some cases). Preferably this should be a single tdoc (also with solution alternatives, and co-sourced by multiple companies).
		3. Wise to ensure the WI CR editor is involved in this offline
		4. This outcome should be captured inside the RIL in the review file by the WI Source company or WI CR editor, as agreed. This ensures transparency.
5. Companies are encouraged to provide early drafts with TPs on solutions, so that other companies can check whether the solution is agreeable. Use the **Offline discussions** ftp folder for this purpose, and add subfolder per WI code (e.g. Gen, MBS, MUSIM, …).
6. At the end of the phase focused on introducing RILs to the Review file, **WI CR editors** will update the RRC review file for the WI-specific RILs, **Status** field (currently set to “ToDo”), as follows:
	1. **PropAgree**, for RIL where the proposed solution is implemented in the WI CR
	2. **PropReject**, for RIL where you reject the proposal made in the RIL
	3. Remaining RILs are left as **ToDo**. They are typically expected to be covered in specific tdoc as indicated in the RIL and be handled in the WI session at the RAN2 meeting.
	4. **Duplicate**, for RIL that covers same issue as another RIL.
	Good practice is to add some text on the outcome of the RIL, (e.g. from offline discussions, who will provide tdoc, …) in the RIL Comments field.
	5. The RRC spec rapporteur will take care of RILs with WI codes Gen and MULTI
	6. The RRC spec rapporteur will provide Excel file with all RILs in table format to support this.
7. **WI CR editors** are asked do the following:
	1. Try to update the Status field and add further comments for WI specific RILs as much as possible in the ASN.1 Review file (this may not be possible in all cases as companies may add comments until last minute).
	2. Extract the RIL comments from the latest ASN.1 review file into excel file (**WI RIL List**) using macro and add rapporteur resolutions directly in the excel sheet Comments column (if not already added as part of step 7a).
		1. RRC Spec Rapp will provide further guidance on “latest ASN.1 file”.
		2. RRC Spec Rapp will upload RIL lists to the FTP folder now and then.
	3. Submit to the RAN2 meeting the following:
		1. WI RIL list comments excel sheet per WI (from step 7b).
			1. At WI session, RAN2 is expected to agree on the outcome of the ASN.1 review (i.e. companies will confirm the RIL Status settings PropAgree/PropReject/Duplicate, or raise concern).
			2. This list can be used to track the status during the RAN2 meeting.
		2. WI Change request with resolutions to the PropAgree RILs.
			1. This WI CR can be used during the meeting to capture any further agreeable changes.

In mails sent on RAN2 reflector and in offline mails (e.g. related to specific RILs and Wis), use the following mail subject fields:

**[R18 ASN1][NR][<WI code>]** Exxx, Eyyy

**[R18 ASN1][LTE][<WI code>]** Exxxx, Eyyy

# Check out/in ASN.1 Review file:

To avoid parallel editing of the ASN.1 Review file, we use a simple check-out mechanism.
The following steps need to be followed:

1. **Create** a check-out file
	1. Name the file “vX is locked for editing.txt”, where X is the highest version of the Review file stored in the FTP folder. E.g. “v06 is locked for editing.txt”
	2. Insert your name and email i.e. <Delegate name (Delegate email)>, as only content in the file.
2. **Upload** this checkout file to the FTP folder.
	1. If your checkout file was successfully uploaded, you have now checked out the review file.
3. **Download** the Review file vX locally to your disc, and **step** the version of the ASN.1 review file from vX to v(X+1), e.g. “38331 Rel18 ASN1 review v07”
4. **Insert** your RILs and RIL comments into the ASN.1 review file.
	1. Ensure to have **Tracked changes “OFF”** when adding/modifying RILs in the Review file.
	2. For each RIL, Indicate the v(x+1) in the field **[Proposed Conclusion]**, e.g. **[****Proposed Conclusion]**: v07
5. **Upload** the updated Review file to the FTP folder.
	1. By this, you now allow others to check-out the Review file.
6. **Send** a “check in” email on RAN2 reflector.
	1. Use this text in the Subject field of the email, for LTE and NR:
		1. [R18 ASN1] NR Review file Check-in
		2. [R18 ASN1] LTE Review file Check-in
	2. In the body of the email, indicate the ASN.1 review file name and new version of the file you have uploaded.
	3. List the added and commented RILs in the body of the email
		1. Added RILs: Exx1, Exx2 etc
		2. Commented RILs: Yxx1, Zxx1 etc

**NOTE** For this process to work effectively we ask that you **do not have file checked out for more than 1 hour** (implying you must do the review work and prepare the RILs “offline”, before checking out the Review file for editing)

# Class 0 issues

Class 0 issues shall be stored by the companies in the file **NR Rel-18 ASN.1 Editorials vX** by following this procedure:

To avoid parallel editing of this file, we use a simple check-out/check-in mechanism.
The following steps need to be followed:

1. **Create** a check-out file
	1. Name the file “vX is locked for editing.txt”, where X is the highest version of the Editorials file stored in the FTP folder. E.g. “v06 is locked for editing.txt”
	2. Insert your name and email i.e. <Delegate name (Delegate email)>, as only content in the file.
2. **Upload** this checkout file to the FTP folder.
	1. If your checkout file was successfully uploaded, you have now checked out the Editorials file.
3. **Download** the Editorials file vX locally to your disc, and **step** the version of the Editorials file from vX to v(X+1).
4. **Insert** your draft changes into the Editorials file.
5. **Upload** the updated Editorials file to the FTP folder.
	1. By this, you now allow others to check-out the Editorials file.

**NOTE** For this process to work effectively we ask that you **do not have file checked out for more than 1 hour** (implying you must do the review work and prepare the RILs “offline”, before checking out the Editorials file for editing)

# Some general advices and tricks

## General

1. Ensure to have **Tracked changes “OFF”** when adding/modifying RILs in the Review file.
2. With the Word comment, do not mark/select several words or bigger chunks of text. Only put down the insertion point.
3. Do not use Word comment features “Reply” or “Resolve”.
4. Before adding a new issue, please read the existing comments in that part of the spec to avoid creating a duplicate. You may respond to an existing comment and add your company view.
5. Each company is responsible to ensure that the issue number is unique within their company. Do not use the same RIL number at multiple locations.

## For issues that need a separate Tdoc:

* You can store a draft version of the tdoc in the 3GPP ftp folder.
* Create a folder in the ftp review folder named by the RIL issue (e.g. E123) and store a draft tdoc here.
* When submitting a tdoc related to a RIL, be sure to include the RIL number(s) in the tdoc title, e.g. “[E123] Feature X correction”

## Copy text from an entire bubble comment from one word document to another

If you need to select/copy/paste text in a RIL Comment, you maybe discovered already it is a bit tricky to select text in the macro-generated Comment-field, or when in Print view.

You can use the method below to copy text from an entire RIL bubble comment from one Word document to another.

1. **Be in draft-view** in the source document.
2. **Locate and mark the comment’s anchor point** of the comment you want to copy. It is the little [letter+number} at the end of the range where you placed your comment in the document (e.g. [E1]). Only this “symbol” must be selected!
3. **Press Ctrl-C** to copy the comment.
4. **Go to the target document** and be in draft view.
5. Place the cursor into the document but **do not make selection** (do not highlight any characters).
6. **Press Ctrl-V** to paste the comment.

# Company identifiers

The following 1-letter identifiers are “reserved” by companies since earlier reviews, e.g. to form the RIL issue number.

Companies wishing to participate in the review can send mail to hakan.l.palm@ericsson.com to reserve their letter.

|  |  |
| --- | --- |
| **ID** | **Companies** |
| A | Apple |
| B | Lenovo |
| C | CATT |
| D | DOCOMO |
| E | Ericsson |
| F | Fujitsu |
| G | Google |
| H | Huawei |
| I | Intel |
| J | Sharp |
| K  | ASUSTeK |
| L | LGE |
| M | Mediatek |
| N | Nokia |
| O | OPPO |
| P | CMCC |
| Q | QUALCOMM |
| R | Rapporteur |
| S | Samsung |
| T | Microelectronics Technology Inc. |
| U | China Unicom |
| V | Vivo |
| W | NEC |
| X | Xiaomi |
| Y | Toyota ITC |
| Z | ZTE |

# WI identifiers

The following identifiers need to be used when linking a certain RIL to the WI that is addressed.

Please use the exact spelling of the WI code!

If more than one WI is affected, please provide the list in the RIL according to the following format: **[WI]**: WI1, WI2, … (in alphabetical order, e.g. “MBS, SON, URLLC”).

Typically, the first-listed source company is expected to draft the WI-specific CR, unless other is agreed during the review.

## WI codes (NR)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WI Code** | **Related WIs** | **WI CR** | **TDoc** | **Source** |
| GEN |  |  |  |  |
| Multi |  |  |  |  |
| NPN | [eNPN\_Ph2-NGRAN-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=991138) | Introduction of R18 eNPN for TS 38.331 | [**R2-2311996**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2311996.zip) | China Telecom |
| SDT | [NR\_MT\_SDT-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=941100) | Introduction of MT-SDT | [**R2-2312091**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2312091.zip) | ZTE Corporation (rapporteur) |
| RedCapMBS | NR\_MBS-Core, NR\_redcap-Core, TEI18 | RedCap CFR for MBS broadcast [RedCapMBS\_Bcast] | [**R2-2312371**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2312371.zip) | Qualcomm Incorporated, Ericsson, Verizon, FirstNet, Xiaomi, ZTE |
| 1symbolPRS | [TEI18](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=920042) | Introduction of 1-symbol PRS in 38.331[1symbol\_PRS] | [**R2-2312447**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2312447.zip) | ZTE Corporation |
| DSS | [NR\_DSS\_enh-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=940193) | Introduction of R18 DSS | [**R2-2312995**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2312995.zip) | Ericsson, ZTE Corporation |
| PCV | [TEI18](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=920042) | SSR Satellite PCV Residuals [Rel18PCV] | [**R2-2313046**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313046.zip) | Swift Navigation, Ericsson |
| GAP | [NR\_MG\_enh2-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950182) | Introduction of further measurement gap enhancements | [**R2-2313625**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313625.zip) | MediaTek Inc., Huawei, HiSilicon |
| UAV | NR\_UAV-Core, LTE\_UAV\_enh-Core | Introduction of NR Support for UAV (Uncrewed Aerial Vehicles) | [**R2-2313638**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313638.zip) | Qualcomm Incorporated |
| SDT | [TEI18](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=920042) | Introduction of RRCRelease with resume indication for SDT [SDT\_ReleaseEnh] | [**R2-2313652**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313652.zip) | Huawei, HiSilicon, China Telecom, Qualcomm, CATT, Lenovo, Orange, Vodafone, CMCC, China Unicom |
| POS | [NR\_pos\_enh2](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=981038) | Introduction of NR Positioning Enhancements | [**R2-2313657**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313657.zip) | Ericsson |
| NES | [Netw\_Energy\_NR-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=981137) | Introduction of Network energy savings for NR | [**R2-2313660**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313660.zip) | Huawei, HiSilicon |
| IAB | [NR\_mobile\_IAB-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=941109) | Introduction of mobile IAB | [**R2-2313671**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313671.zip) | Ericsson |
| UECap | NR\_MIMO\_evo\_DL\_UL-Core, NR\_pos\_enh2-Core, Netw\_Energy\_NR-Core, NR\_netcon\_repeater-Core, NR\_NTN\_enh-Core, NR\_Mob\_enh2-Core, NR\_UAV-Core, NR\_SL\_enh2-Core, NR\_redcap\_enh-Core, NR\_MC\_enh, NR\_XR\_enh, NR\_FR1\_lessthan\_5MHz\_BW, NR\_DSS\_enh, NR\_BWP\_wor, NR\_ENDC\_RF\_FR1\_enh2-Core, NR\_FR2\_multiRX\_DL-Core, NR\_RRM\_enh3-Core, NonCol\_intraB\_ENDC\_NR\_CA-Core, NR\_ATG-Core, 4Rx\_low\_NR\_band\_handheld\_3Tx\_NR\_CA\_ENDC-Core, NR\_MG\_enh2-Core, NR\_SL\_relay\_enh-Core, NR\_IDC\_enh-Core, NR\_MBS\_enh-Core, NR\_mobile\_IAB-Core, NR\_ENDC\_SON\_MDT\_enh2-Core, NR\_QoE\_enh-Core, NR\_DualTxRx\_MUSIM-Core, NR\_MT\_SDT-Core, eNPN\_Ph2-NGRAN-Core, TEI18 | Introduction of Rel-18 UE capabilities | [**R2-2313676**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313676.zip) | Intel Corporation |
| BWPwor | [NR\_BWP\_wor-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=991144) | Introduction of support for BWP operation without restriction | [**R2-2313691**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313691.zip) | vivo, Vodafone, ZTE Corporation, Sanechips, Ericsson |
| IDC | [NR\_IDC\_enh-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=941103) | Introduction of In-Device Co-existence (IDC) enhancements for NR | [**R2-2313702**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313702.zip) | Xiaomi |
| AdvRec | [NR\_demod\_enh3-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=1001061) | Introduction of network RRC signalling for advanced receiver | [**R2-2313704**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313704.zip) | CATT, China Telecom |
| ATG | [NR\_ATG-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950175) | Introduction of NR ATG in TS 38.331 | [**R2-2313707**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313707.zip) | CMCC |
| RedCap | [NR\_redcap\_enh-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=970180) | Introduction of eRedCap UEs | [**R2-2313743**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313743.zip) | Ericsson |
| XR | [NR\_XR\_enh-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=981139) | Introduction of XR enhancements into TS 38.331 | [**R2-2313762**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313762.zip) | Huawei, HiSilicon |
| NTN | [NR\_NTN\_enh-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=941106) | Introduction of Rel-18 NR NTN enhancements | [**R2-2313772**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313772.zip) | Ericsson |
| MUSIM | [TEI18](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=920042) | MUSIM paging cause forwarding [MUSIMpagingCause] | [**R2-2313810**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313810.zip) | vivo, Samsung, Ericsson, Qualcomm Incorporated |
| PosRemoteUE | [TEI18](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=920042) | Downlink positioning support and posSIB request for L2 UE-to-network remote UE [PosL2RemoteUE] | [**R2-2313813**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313813.zip) | MediaTek Inc., CATT, Huawei, HiSilicon, Qualcomm Incorporated, Xiaomi, Intel Corporation, vivo, Ericsson, Samsung, ZTE, Lenovo |
| SON | [NR\_ENDC\_SON\_MDT\_enh2-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=941107) | CR to 38331 for introducing SON/MDT features in Rel-18 | [**R2-2313855**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313855.zip) | Ericsson, Huawei, ZTE |
| NonCol | [NonCol\_intraB\_ENDC\_NR\_CA-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950181) | Signaling support for intra-band non-collocated NR-CA, EN-DC | [**R2-2313888**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313888.zip) | KDDI Corporation, Apple, Ericsson, Huawei, HiSilicon, Samsung |
| MBS | NR\_MBS-Core, TEI18 | PTM retransmission reception for multicast DRX with HARQ feedback disabled [PTM\_ReTx\_Mcast\_HARQ\_Disb] | [**R2-2313900**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313900.zip) | Nokia, Nokia Shanghai Bell, AT&T, Qualcomm, Samsung, Verizon, Ericsson |
| MeasSeq | [TEI18](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=920042) | Introducing procedure for measurement sequence for intra-RAT and inter-RAT measurement [MeasSequence] | [**R2-2313907**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313907.zip) | CMCC, Ericsson, ZTE, KDDI, Samsung, CATT |
| SRper | TEI18, NR\_newRAT-Core | Adding SR periodicities for 30 and 120 kHz subcarrier spacing [SR-Periods-30-120-kHz] | [**R2-2313915**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313915.zip) | Ericsson, Huawei, ZTE Corporation |
| EventA2 | [TEI18](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=920042) | Enhancing SCell A2 event reporting [SCell\_A2\_Enh] | [**R2-2313918**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313918.zip) | KDDI Corporation, Ericsson, NTT Docomo, BT Plc., AT&T, Turkcell, Qualcomm Incorporated, ZTE Corporation |
| DelayMeas | TEI18, NR\_SON\_MDT-Core | Introduction of enhancements of delay measurements upon MO updates [SONMDT-enh] | [**R2-2313921**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313921.zip) | Huawei, HiSilicon |
| CGSDTEnh | [TEI18](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=920042) | Enhancements for CG-SDT [CG-SDT-Enh] | [**R2-2313924**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313924.zip) | Ericsson, Intel Corporation, ZTE Corporation, Sanechips, Huawei |
| FR2Scell | [NR\_RRM\_enh3](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950078) | Introduction of FR2 SCell enhancements | [**R2-2313936**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313936.zip) | Apple, CATT, Ericsson, Xiaomi, Qualcomm Incorporated, Huawei, HiSilicon, ZTE |
| MultiRx | [NR\_FR2\_multiRX\_DL-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950177) | Introduction of UE preference for multi-Rx operation in UAI | [**R2-2313952**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313952.zip) | Apple, Huawei, HiSilicon, CATT, Ericsson, Samsung |
| URLLC | [TRS\_URLLC-NR-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=991136) | Introduction of URLLC and Timing Resiliency | [**R2-2313957**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313957.zip) | Ericsson |
| CIO | [TEI18](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=920042) | Configuration of cell individual offset in ReportConfig [CIO\_in\_ReportConfig] | [**R2-2313958**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313958.zip) | NTT Docomo, Ericsson, KDDI corporation, BT Plc., AT&T, Orange, Turkcell, Deutsche Telekom |
| ULTxSwitch | [NR\_MC\_enh-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=940194) | Introduction of Rel-18 Multi-carrier enhancements | [**R2-2313967**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313967.zip) | Huawei, HiSilicon, NTT DOCOMO INC. |
| NCR | [NR\_netcon\_repeater](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=970079) | Introduction of Network Controlled Repeaters in RRC spec | [**R2-2314009**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314009.zip) | ZTE Corporation (Rapporteur) |
| QOE | [NR\_QoE\_enh-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=941108) | Introduction of Enhancement on NR QoE management and optimizations for diverse services | [**R2-2314024**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314024.zip) | Ericsson |
| SL | [NR\_SL\_enh2-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=940197) | Introduction of Rel-18 SL Evolution | [**R2-2314037**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314037.zip) | OPPO (Rapporteur) |
| MBS | [NR\_MBS\_enh-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=940199) | Introduction of eMBS to RRC | [**R2-2314041**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314041.zip) | Huawei, HiSilicon |
| SLrelay | [NR\_SL\_relay\_enh-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=941102) | Introduction of Rel-18 SL relay enhancement | [**R2-2314042**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314042.zip) | Huawei, HiSilicon, vivo, MediaTek Inc. |
| POSLOS | [TEI18](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=920042) | GNSS LOS/NLOS posSIB broadcast assistance information [GNSS LOS/NLOS] | [**R2-2314055**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314055.zip) | Vodafone, Spirent, Ericsson, Telecom Italia, Samsung |
| Mob | [NR\_Mob\_enh2-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=940198) | Introduction of further NR mobility enhancements | [**R2-2314056**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314056.zip) | Ericsson |
| CovEnh | [NR\_cov\_enh2-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=940195) | Introduction of Further NR coverage enhancements in RRC | [**R2-2314064**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314064.zip) | Huawei, HiSilicon |
| MUSIM | [NR\_DualTxRx\_MUSIM-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=941101) | Introduction of NR MUSIM enhancements | [**R2-2314069**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314069.zip) | vivo |
| MIMO | [NR\_MIMO\_evo\_DL\_UL-Core](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=940196) | Introduction of MIMO Evolution | [**R2-2314070**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314070.zip) | Ericsson |

## WI codes (LTE)

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| **WI** | **Related WIs** | **WI CR** | **RAN2 Tdoc** | **Source** |
| MULTI |  |  |  |  |
| GEN |  |  |  |  |
| IoTNTN | IoT\_NTN\_enh-Core | Introduction of IoT NTN enhancements | [**R2-2313780**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313780.zip) | Huawei, HiSilicon |
| UAV | LTE\_UAV\_enh-Core, NR\_UAV-Core | Introduction of Enhanced LTE Support for UAV (Uncrewed Aerial Vehicles) | [**R2-2313639**](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_124/Docs/R2-2313639.zip) | Qualcomm Incorporated |
| SONMDT | NR\_ENDC\_SON\_MDT\_enh2-Core | CR to 36.331 for UE capability for R18 SONMDT | [**R2-2313131**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313131.zip) | Huawei, HiSilicon, CATT |
| SONMDT | NR\_ENDC\_SON\_MDT\_enh2-Core | CR to 36331 for introducing SON/MDT features in Rel-18 | [**R2-2314008**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314008.zip) | Huawei, Ericsson, ZTE |
| Aerial | LTE\_Aerial-Core, TEI18 | Correction to flightPathInfoAvailable when connected to 5GC | [**R2-2313098**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313098.zip) | Qualcomm Incorporated, Ericsson |
| MG | NR\_MG\_enh2-Core | Introduction of measurements without gap with interruption | [**R2-2314066**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314066.zip) | MediaTek Inc., Huawei, HiSilicon |
| PCV | TEI18 | SSR Satellite PCV Residuals [Rel18PCV] | [**R2-2313062**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313062.zip) | Swift Navigation, Ericsson |
| Reselect | TEI18 | Protection against improper reselection to GERAN/UTRAN [RESELECTION\_TO GSM\_AND\_UTRAN] | [**R2-2313930**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2313930.zip) | Vodafone, Ericsson |
| Redirect | TEI18 | Network support and clarification of redirection to 3G [REDIRECTION to 3G] | [**R2-2314047**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314047.zip) | Vodafone, Orange, Deutsche Telekom, AT&T, Verizon, Huawei, HiSilicon; Nokia, ViVo |
| GNSS | TEI18 | GNSS LOS/NLOS posSIB broadcast assistance information [GNSS LOS/NLOS] | [**R2-2314054**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_124/Docs/R2-2314054.zip) | Vodafone, Spirent, Ericsson, Telecom Italia, Samsung |
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