3GPP TSG-RAN WG2 Meeting #109 electronic Draft [R2-2001664](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001664.zip)

**24 Feb – 6 Mar 2020**

Source: RAN2 Session chair (InterDigital)

Title: Session minutes for NR-U, Power Savings, NTN and 2-step RACH

**E-meeting guidance:**

Please refer to:

[R2-2002046](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002046 .zip) RAN2 109-e Methods and Guidance   Chairman, Vice Chairmen, Session Chairs   discussion Late

**Webinar tool**

Use the following link for tutorial

<https://assets.cdngetgo.com/5b/83/dda8d81d4bf6b9ec32632861505d/gotowebinar-attendee-slides-1.pptx>

***Use of question box (IMPORTANT - READ)***

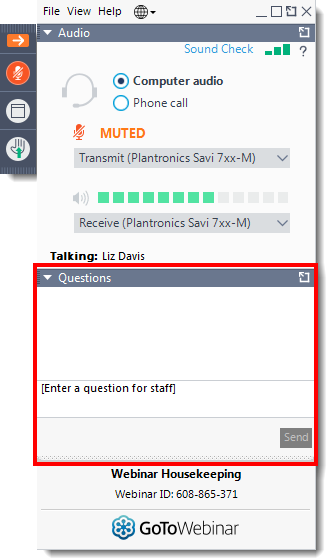
* **[Copying agreements]** I will be using the question/chat box to copy paste the agreements that are being shown live via screen sharing, so delegates that are experiencing delays can also see the agreements.
* **[Making comments/questions]** In addition to the raise hand, delegates can use the question box to enter specific comments/question using the guideline specified below (see below how to use it).

**Questions box etiquette**:

* Keep question/comment very short (1 line)
* Avoid multiple comments on one issue
* Only make a comment on the proposal that is currently being discussed
* Do not use question box to say you agree
* Please appoint a single delegate per proposal to make comments/questions

**When making a comment** please use a tag (to specify type of comment you want to make) followed by the actual comment/question. Use the following tags:

* Disagree: (what you disagree with/why)?
* Wording: (wording suggestion – copy only relevant part of the agreement so it remains short)
* Question: (only questions to understand the issue being discussed)
* Comment: (short description comment) – use this tag if it is none of the above



**Question/Chat box**

* Click on this undocking button to undock the question box and expand it for ease of readability.
* With the help of a moderator, we will be monitoring the questions/comments to determine who should speak next. This will be used in addition to the raise hand option.
* You will NOT be able to see comments/questions from other people. We will either call out the person to speak or we will read out the comment if it is short and quick
* This DOES NOT preclude the use of the hand function

**Organizational:**

1. LSs – contact companies should flag LSs that need presenting. Otherwise we will directly note them
2. Running CRs will be endorsed to be used as baseline and moved to email discussion. Further agreements will be captured on that baseline CR and further comments can only be provided online. Rapporteurs should flag if there is a big issue that needs to be discussed before the meeting
3. Only Email discussions and summary discussions will be treated during e-meetings (indicated clearly in the meeting notes)
4. All organization emails and notes will be shared over the following email discussion throughout the two meeting weeks:

* [AT109e][500] Organizational Diana - NR-U, 2-step RACH, Power Savings

Scope:

* + - Share plans for the meetings and list of ongoing email discussions for the sessions related to NR-U, 2-step RACH, and power saving
    - Share meetings notes and agreements for review and endorsement

**Recording**

Recording of voice or video at meetings is not used in 3GPP. This applies also to this e-Meeting. At this e-Meeting, no specific actions are taken to prevent the recording of web conferences. Companies that have concerns related to recordings, if any, may express those by email in the main meeting organizational thread [AT109e][000]

**Schedule/Plan:**

**NR-U**

Monday February 24th, 13:30 – 15:30 CET

* Treat only flagged LS
* Endorse CRs without presentation and give revised numbers and move them to email discussions

Treat ongoing email discussions on open issues (**Email discussions**: [108#38] [108#75]

Thursday, March 5th 05:30– 6:30 CET

* Treat only email discussions on summary of remaining open issues (**Email discussions**: 501, 502, 503)

**Power saving:**

Tuesday, February 25th, 15:30 – 17:30 CET

* Treated only flagged LS
* Endorse CRs without presentation and give revised numbers and move them to email discussions
* Treat ongoing email discussions on open issues (**Email discussions**: [108#39][108#78][108#79])

Tuesday, March 3rd , 05:30– 6:30 CET

* Treat only email discussions on summary of remaining open issues (**Email discussions**: 504, 505, 506)

**2-step RACH:**

Wednesday, February 26th, 15:30 – 17:30 CET

* Treated only flagged LS
* Endorse CRs without presentation and give revised numbers and move them to email discussions
* Treat ongoing email discussions on open issues (**Email discussions: [108#82] [108#82]** )

Wednesday, March 4th, 05:30– 6:30 CET

* Treat only email discussions on summary of remaining open issues (**Email discussions**: 507, 508)

**List of offline email discussions:**

*NOTE: The official kickoff date for these email discussions are Monday 24th, however the rapporteurs can send them before this date and companies are welcome to participate before (but do not have to until the official kick off on Monday, Feb. 24th)*

**NR-U**

* [AT109e][501][NR-U] UP Open Issues for RACH and UL LBT (InterDigital)

Scope:

* + - Identify/Summarize all remaining open issues related to RACH and UL LBT from submitted papers in 6.2.2.1 and 6.2.2.2 and seek companies feedback on the need to solve the critical issue and preferred solutions.

Intended outcome:

* + - Set of proposals with full consensus (aim to agree to those over email)
    - Set of proposals with almost full consensus and easy to agree
    - Set of open issues and proposals to postpone to next meeting.
    - Open issues that should no longer be pursued

Deadline for providing comments:

* + - Companies input: Wednesday, Feb. 26th 15:00 CET
    - Rapporteur proposals: Thursday, Feb. 27th 3:00 CET (one day for rapporteur to make conclusions)
    - Comments on proposals’ wording, Friday, Feb. 28th by 18:00 CET
* [AT109e][502][NR-U] UP open issues for CG and Others AI (OPPO)

Scope:

* + - Identify/Summarize all remaining open issues related to CG and Other AI from submitted papers in 6.2.2.3 and 6.2.2.4 and seek companies feedback on the need to solve the critical issue and preferred solutions.

Intended outcome:

* + - Set of proposals with full consensus (aim to agree to those over email)
    - Set of proposals with almost full consensus and easy to agree
    - Set of open issues and proposals to postpone to next meeting.
    - Open issues that should no longer be pursued

Deadline for providing comments:

* + - Companies input: Thursday, Feb. 27th 3:00 CET
    - Rapporteur proposals: Thursday, Feb. 27th 17:00 CET
    - Comments on proposals’ wording, Monday March 2nd by 10:00 CET
* [AT109e][503][NR-U] CP open issues (Qualcomm)

Scope:

* + - Identify/Summarize all remaining open issues related to Mobility and Others from AI 6.2.3.1 and 6.2.3.2 and seek companies feedback on the need to solve the critical issue and preferred solutions.

Intended outcome:

* + - Set of proposals with full consensus (aim to agree to those over email)
    - Set of proposals with almost full consensus and easy to agree
    - Set of open issues and proposals to postpone to next meeting.
    - Open issues that should no longer be pursued

Deadline for providing comments:

* + - Companies input: Wednesday, Feb. 26th 18:00 CET
    - Rapporteur proposals: Thursday, Feb. 27th 4:00 CET (one day for rapporteur to make conclusions)
    - Comments on proposals’ wording, Friday, Feb. 28th by 20:00 CET
* [AT109e][509][NR-U] LS response to RAN1 (Qualcomm)

Scope: LS response to RAN1 on MIB signalling of Q

Intended outcome: LS to be sent to RAN1 and approval by email from session chair

Deadline: Friday, February 28th

* [AT109e][510][NR-U] RRC Running CR (Qualcomm)

Scope: updated running CR with agreements from week1

**Intended outcome Phase 1**: agreeable CR to be used as baseline to capture further agreements from week2

Deadline: Friday, Feb. 28th

**Intended outcome Phase 2**: agreeable CR for plenary approval

Deadline: Friday, March 6th (with possibility to extend to March 10th)

* [AT109e][511][NR-U] 37.340 Running CR (Oppo)

Scope: updated running CR with agreements and review for final plenary submission

Intended outcome: email approval of CR for plenary submission

Deadline: Wednesday, March 4th

* [AT109e][512][NR-U] 38.300 Running CR (Qualcomm)

Scope: updated running CR with agreements and review for final plenary submission

Intended outcome: email approval of CR for plenary submission

Deadline: Friday, March 6th

* [AT109e][513][NR-U] 38.304 Running CR (Qualcomm)

Scope: updated running CR with agreements and review for final plenary submission

Intended outcome: email approval of CR for plenary submission

Deadline: Friday, March 6th

* [AT109e][514][NR-U] 38.321 Running CR (Ericsson)

Scope: updated running CR with agreements and review for final plenary submission

Intended outcome: email approval of CR for plenary submission

Deadline: Friday, March 6th (with possibility to extend to March 10th)

NOTE: updated version will be triggered after some week2 agreements

**Power Saving**

* [AT109e][504][PowSav] PDCCH related open issues (CATT)

Scope:

* + - Identify/Summarize all remaining open issues related to PDCCH-based power saving signal from AI 6.11.2 and seek companies feedback on the need to solve the critical issue and preferred solutions.

Intended outcome:

* + - Set of proposals with full consensus (aim to agree to those over email)
    - Set of proposals with almost full consensus and easy to agree
    - Set of open issues and proposals to postpone to next meeting.
    - Open issues that should no longer be pursued

Deadline for providing comments:

* + - Companies input: Wednesday, Feb. 26th 17:00 CET
    - Rapporteur proposals: Thursday, Feb. 27th 17:00 CET (one day for rapporteur to make conclusions)
    - Comments on proposals’ wording, Monday, March 2nd by 12:00 CET
* [AT109e][505][PowSav] UE assistance open issues (Qualcomm)

Scope:

* + - Identify/Summarize all remaining open issues related to UE assistance open issues from AI 6.11.3 and seek companies feedback on the need to solve the critical issue and preferred solutions.

Intended outcome:

* + - Set of proposals with full consensus (aim to agree to those over email)
    - Set of proposals with almost full consensus and easy to agree
    - Set of open issues and proposals to postpone to next meeting.
    - Open issues that should no longer be pursued

Deadline for providing comments:

* + - Companies input: Wednesday , Feb. 26th 18:00 CET
    - Rapporteur proposals: Thursday, Feb. 27th 6:00 CET (one day for rapporteur to make conclusions)
    - Comments on proposals’ wording: Monday, March 2nd by 17:00 CET
* [AT109e][506][PowSav] RRM relaxation (Huawei)

Scope:

* + - Identify/Summarize all remaining open issues related to RRM relaxation from AI 6.11.4 and seek companies feedback on the need to solve the critical issue and preferred solutions.

Intended outcome:

* + - Set of proposals with full consensus (aim to agree to those over email)
    - Set of proposals with almost full consensus and easy to agree
    - Set of open issues and proposals to postpone to next meeting.
    - Open issues that should no longer be pursued

Deadline for providing comments:

* + - Companies input: Wednesday, Feb. 26th 18:00 CET
    - Rapporteur proposals: Thursday, Feb. 27th 6:00 CET (one day for rapporteur to make conclusions)
    - Comments on proposals’ wording, Monday, March 2nd by 17:00 CET
* [AT109e][515][PowSav] 38.304 Running CR (Vivo)

Scope: updated running CR with agreements from week1 and week2

**Intended outcome Phase 1**: agreeable CR to be used as baseline to capture further agreements from week2

**Deadline**: Friday, Feb. 28th

**Intended outcome Phase 2**: approved CR for plenary submission

Deadline: Friday, March 6th (with possibility to extend to March 10th)

* [AT109e][516][ PowSav] RRC Running CR (Mediatek)

Scope: updated running CR with agreements from week1 and week2

**Intended outcome Phase 1**: agreeable CR to be used as baseline to capture further agreements from week2

**Deadline**: Friday, Feb. 28th

**Intended outcome Phase 2**: approved CR for plenary submission

Deadline: Friday, March 6th (with possibility to extend to March 10th)

* [AT109e][517][PowSav] 37.340 Running CR (Oppo)

Scope: updated running CR with agreements and review for final plenary submission

Intended outcome: email approval of CR for plenary submission

Deadline: Wednesday, March 4th

* [AT109e][518][ PowSav] 38.300 Running CR (CATT)

Scope: updated running CR with agreements and review for final plenary submission

Intended outcome: email approval of CR for plenary submission

Deadline: Friday, March 6th

* [AT109e][519][PowSav] 38.321 Running CR (Huawei)

Scope: updated running CR with agreements from week1 and week2

**Intended outcome Phase 1**: agreeable CR to be used as baseline to capture further agreements from week2

**Deadline**: Friday, Feb. 28th

**Intended outcome Phase 2**: approved CR for plenary submission

Deadline: Friday, March 6th (with possibility to extend to March 10th)

* [AT109e][523][ PowSav] LS to RAN1 (Huawei)

Scope: updated of [R2-2001617](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001617.zip) capturing agreements related to MAC-PHY modelling and also question to confirm CSI/L1-RSRP reporting.

Intended outcome: email approval

Deadline: Friday, Feb. 28th

* [AT109e][524][ PowSav] LS to RAN4 (Vivo)

Scope: LS to RAN4 or RAN2 agreements related to RRM

Intended outcome: email approval

Deadline: March 5th

**2-step RACH**

* [AT109e][507][2-step RA] UP open issues (ZTE)

Scope:

* + - Identify/Summarize all remaining open issues related to UP open issues from AI 6.13.2 and seek companies feedback on the need to solve the critical issue and preferred solutions.

Intended outcome:

* + - Set of proposals with full consensus (aim to agree to those over email)
    - Set of proposals with almost full consensus and easy to agree
    - Set of open issues and proposals to postpone to next meeting.
    - Open issues that should no longer be pursued

Deadline for providing comments:

* + - Companies input: Thursday, Feb. 27th 18:00 CET
    - Rapporteur proposals: Friday, Feb. 28th 18:00 CET (one day for rapporteur to make conclusions)
    - Comments on proposals’ wording, Tuesday, March 3rd by 08:00 CET
* [AT109e][508][2-step RA] CP open issues (Ericsson)

Scope:

* + - Identify/Summarize all remaining open issues related to CP open issues f4rom AI 6.13.3 and related CP issues in 6.13.4 and seek companies feedback on the need to solve the critical issue and preferred solutions.

Intended outcome:

* + - Set of proposals with full consensus (aim to agree to those over email)
    - Set of proposals with almost full consensus and easy to agree
    - Set of open issues and proposals to postpone to next meeting.
    - Open issues that should no longer be pursued

Deadline for providing comments:

* + - Companies input: Thursday, Feb. 27th 18:00 CET
    - Rapporteur proposals: Friday, Feb. 28th 18:00 CET (one day for rapporteur to make conclusions)
    - Comments on proposals’ wording, Tuesday, March 3rd by 08:00 CET
* [AT109e][520][2-step RA] RRC Running CR (Ericsson)

Scope: updated running CR with agreements from week1 and week2

**Intended outcome Phase 1**: agreeable CR to be used as baseline to capture further agreements from week2

**Deadline**: Friday, Feb. 28th

**Intended outcome Phase 2**: approved CR for plenary submission

Deadline: Friday, March 6th (with possibility to extend to March 10th)

* [AT109e][521][2-step RA ] 38.300 Running CR (Nokia)

Scope: updated running CR with agreements and review for final plenary submission

Intended outcome: email approval of CR for plenary submission

Deadline: Friday, March 6th

* [AT109e][522][2-step RA ] 38.321 Running CR (ZTE)

Scope: updated running CR with agreements from week1 and week2

**Intended outcome Phase 1**: agreeable CR to be used as baseline to capture further agreements from week2

**Deadline**: Friday, Feb. 28th

**Intended outcome Phase 2**: approved CR for plenary submission

Deadline: Friday, March 6th (with possibility to extend to March 10th)

NOTE: deadlines are meant to allow at least all regions to have one day to comment (other than weekend) and also give rapporteurs time to update their proposals before the meeting)

* [AT109e][525][2-step RA ] LS to RAN1 on 2-step CFRA (Ericsson)

**Intended outcome**: approve LS to RAN1 on the identified options for preamble-to-PRU mapping for 2-step CFRA

**Deadline**: Friday March 6th

## 6.2 NR-based Access to Unlicensed Spectrum

(NR\_unlic-Core; leading WG: RAN1; REL-16; started: Dec 18; target; Mar 20; WID: [RP-191575](file:///C:\Data\3GPP\Extracts\RP-191575%20Revised%20WID%20NR-U.doc); Further prioritization guidance in RP-191581). Documents in this agenda item will be handled in a break out session.

Time budget: 3 TU

Tdoc Limitation: 9 tdocs

### 6.2.1 General

Including incoming LSs, rapporteur inputs, etc.  
Contributions in this AI are reserved for WI rapporteur inputs and/or spec rapporteur inputs and do not count towards the tdoc limits.

Rapporteur of WI can submit a paper on UE capabilities for informational purposes, but it will not be treated during e-meeting

Including outcome of the email discussion [108#38][NR-U] Running 38.331 (Qualcomm)

Including outcome of the email discussion [108#74][NR-U] Running 38.300 (Qualcomm)

Including outcome of the email discussion [108#75][NR-U] Running 38.321 (Ericsson)

Including outcome of the email discussion [108#76][NR-U] Running 38.304 (Qualcomm)

Including outcome of the email discussion [108#77][NR-U] Running 37.340 (Oppo)

**The LSs should only be presented if the presenting companies flag it, otherwise they will be noted.**

[R2-2000018](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000018.zip) Reply LS on PHR reporting for NR-U (R1-1913584; contact: Lenovo) RAN1 LS in Rel-16 NR\_unlic-Core To:RAN2

=> RAN2 will treat this in offline 502

=> Noted

[R2-2000016](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000016.zip) Response LS to RAN2 LS on SFN LSB indication in msg2/msgB (R1-1913582; contact: Qualcomm) RAN1 LS in Rel-16 NR\_unlic-Core, NR\_2step\_RACH-Core To:RAN2

=> Noted

[R2-2000021](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000021.zip) LS on signaling of Q for a serving cell in NR-U (R1-1913592; contact: Nokia) RAN1 LS in Rel-16 NR\_unlic To:RAN2  
=> Noted

From RAN2 point of view, the CR will be submitted for approval in plenary meeting. Stage 3 corrections and the FFS can be addressed in the April e-meeting. Further enhancements past the agreed FFS are not encouraged

**CRs to be endorsed without presentation as baseline. Further agreements will be captured using these CRs as a baseline and companies can continue further discussions over email:**

[R2-2000414](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000414.zip) Running CR to 37.340 for NR-U OPPO CR Rel-16 37.340 16.0.0 0183 - B NR\_unlic-Core

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e (if any) and moved to email discussion to be approved for RAN Plenary submission

=> The CR is revised in [R2-2001921](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001921.zip)

[R2-2001921](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001921.zip) Running CR to 37.340 for NR-U OPPO CR Rel-16 37.340 16.0.0 0183 1 B NR\_unlic-Core

**Outcome:** email approval

**Deadline**: Wednesday, March 4th

[Offline discussion 511]

[R2-2001254](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001254.zip) Running RRC CR for NR Shared Spectrum Qualcomm Incorporated CR Rel-16 38.331 15.8.0 1477 - B NR\_unlic-Core

=> The CR will be used as a baseline, will be revised to include all new agreements from week1 and moved to email discussion

=> The CR is revised in [R2-2001920](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001920.zip)

[R2-2001254](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001254.zip) Running RRC CR for NR Shared Spectrum Qualcomm Incorporated CR Rel-16 38.331 15.8.0 1477 1 B NR\_unlic-Core

Intended outcome Phase 1: agreeable CR to be used as baseline to capture further agreements from week2

Deadline: Friday, Feb. 28th

Intended outcome Phase 2: agreeable CR for plenary approval

Deadline: Friday, March 6th (with possibility to extend to March 10th)

[Offline discussion 510]

[R2-2001267](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001267.zip) Running Stage-2 CR for NR Shared Spectrum Qualcomm Incorporated CR Rel-16 38.300 16.0.0 0199 - B NR\_unlic-Core

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e(if any) and moved to email discussion to be approved for RAN Plenary submission

=> The CR is revised in [R2-2001922](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001922.zip)

[R2-2001922](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001922.zip) Running Stage-2 CR for NR Shared Spectrum Qualcomm Incorporated CR Rel-16 38.300 16.0.0 0199 - B NR\_unlic-Core

**Outcome:** email approval

**Deadline**: Friday, March 6th

[Offline discussion 512]

[R2-2001435](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001435.zip) Running Idle/Inactive CR for NR Shared Spectrum Qualcomm Incorporated CR Rel-16 38.304 15.6.0 0149 - B NR\_unlic-Core

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e(if any) and moved to email discussion to be approved for RAN Plenary submission

=> The CR is revised in [R2-2001923](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001923.zip)

[R2-2001923](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001923.zip) Running Idle/Inactive CR for NR Shared Spectrum Qualcomm Incorporated CR Rel-16 38.304 15.6.0 0149 - B NR\_unlic-Core

**Outcome:** email approval

**Deadline**: Friday, March 6th

[Offline discussion 513]

[R2-2001341](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001341.zip) Running MAC CR for NR-U Ericsson CR Rel-16 38.321 15.8.0 0694 - B NR\_unlic-Core

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e, and moved for email discussion after the last session of week2

=> The CR is revised in [R2-2001924](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001924.zip)

[R2-2001924](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001924.zip) Running MAC CR for NR-U Ericsson CR Rel-16 38.321 15.8.0 0694 - B NR\_unlic-Core

- Nokia would like to remove the instances of regardless of LBT failure. Comments will be taken over the email reflector.

**Outcome:** email approval

**Deadline**: Friday, March 6th (with possibility to extend to March 10th)

[Offline discussion 514]

**To be treated in the first slot in the week of Feb. 24th**

[R2-2001437](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001437.zip) Control Plane Open Issues for NR Shared Spectrum Qualcomm Incorporated discussion Late

|  |
| --- |
| **Agreements**   1. Keep the current text in RRC running CR for setting of CAPC priorities for SRBs. Remove the default values in the table in 38.331 Section 9.2.1. 2. Introduce per-cell signalling in Q in measObjectNR. 3. For configured uplink grants configured with cg-RetransmissionTimer, a subset of the total HARQ process ID(s) can be configured for CG(s). 4. For configured uplink grants configured with cg-RetransmissionTimer, same HARQ process ID(s) can be configured for different CG(s). 5. The guard bands for a cell are signalled by using a starting index and length for each guard band, only when the network wants to configure it.   *(FFS – move to offline) RAN2 should further discuss the signalling for the cases when there is no guard band, when RAN4 specs should be used, and when/if the UE does not support guard bands.*   1. A single IE for configuring interlaced PUCCH and PUSCH is included in BWP-UplinkCommon. 2. This IE should also be additionally included in BWP-UplinkDedicated. 3. For numPagingMonitoringOccasionPerSSB, support at least the values of 2, 3, and 4. 4. For lbt-FailureInstanceMaxCount, support at least the values of 4, 8, 16, and 32. 5. For lbt-FailureDetectionTimer, support at least the values of 10ms, 20ms, 40ms, 80ms, 160ms, 320ms. 6. For UL, if SDUs from multiple DCCHs (i.e. SRB1 and SRB2) are multiplexed in a MAC PDU, the CAPC of the MAC PDU is the highest priority CAPC of the DCCHs. 7. *(FFS move to offline*) RAN2 should further discuss the ASN.1 modelling of RSSI reporting. 8. RAN2 will respond to the RAN1 LS ([R2-2000021](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000021.zip)) that there is no consensus in RAN2 to use our only spare bit in MIB for signalling of Q. RAN2 is also discussing whether a new MIB is needed or not. 9. The UE can stop paging monitoring if it receives a short message for SI update and PWS. FFS on whether we can set the new bit to zero with SI bit set to 1 |

**For further discussion online**

*It is FFS if a new MIB will be introduced for NR-U.*

- Ericsson thinks we should use a new MIB and we don’t want to have a hack for a solution

- Oppo thinks that if the UE cannot differentiate between NR and NR-U we may need the new MIB, but otherwise we don’t need a new MIB

- Huawei thinks that a lot of fields are not useful for NR-U, like cell reselection and PDCCH config in SIB1 and this is enough motivation to introduce a new MIB. Whether we can differentiate, we can learn from the NB-IoT

=> The discussion will continue in the offline email discussion

=> FFS and move to offline (if there are any issues for handling of forbidden TAs specific to shared spectrum based on company contributions)

=> wait for RAN1 conclusion on search space grouping and further discuss the ASN.1 modelling afterwards.

[R2-2001919](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001919.zip) LS response to RAN1 on MIB signalling of Q

=> Delete “RAN2 is also discussing whether a new MIB for NR-U is needed or not. “

=> add the agreement on new MIB

=> The LS is approved in R2-2002301

[R2-2001343](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2001343.zip) Summary of open issues for NR-U Running 38.321 Ericsson discussion Rel-16 NR\_unlic-Core Late

=> Revised in [R2-2001918](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001918.zip)

[R2-2001918](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001918.zip) Summary of open issues for NR-U Running 38.321 Ericsson discussion Rel-16 NR\_unlic-Core Late

**Agreements:**

1 When cg-RetransmissionTimer is configured and UE receives a CG (re)activation or deactivation, the UE implementation select one corresponding HARQ process.

FFS whether we need to prioritize the MAC CE and transmission/retransmission.

2 Toggle NDI for CG-UCI for new transmissions and not toggle the NDI in the CG-UCI for retransmissions

3 FFS - When RRC BWP switch or DCI BWP switch is received, cancel any triggered consistent LBT failure in this Serving Cell. Need to deal with overlapping case.

4 FFS - The UE is allowed to transmit other UL transmission after?/while? successful RA procedure triggered by UL LBT failure on SpCell.

**For discussion with hope of quick agreement**

Proposal 2 RAN to select one of:

a) RAN2 expect RAN1 to capture the validation of LSBs of SFN, received in the DCI for RAR when RAR window is extended. Add reference in 5.1.4:

1> else if a valid (see TS 38.213 [6]) downlink assignment has been received on the PDCCH for the RA-RNTI and the received TB is successfully decoded:

- Send LS to RAN1 to indicate desired behaviour

b) Validation of LSBs of SFN, received in the DCI for RAR when RAR window is extended, shall be captured in MAC. Align with the 2-step RACH solution. Add validation in 5.1.4:

1> else if a downlink assignment has been received on the PDCCH for the RA-RNTI and it includes the two LSB bits of the SFN corresponding to the PRACH occasion used to transmit the Random Access Preamble and the received TB is successfully decoded

*=> FFS how to handle this (offline 501)*

*2. What RAN2 has to do and whether we do option a) or b) and what if anything we need to tell RAN1*

Proposal 3

*RAN2 to select one of:*

*a) Reuse the harq-procID-offset field introduced in the IIOT WI. The available HP IDs for a CG config, when cg-RetransmissionTimer is configured, is 0 + HPID-offset, 1 + HPID-offset, …, nrofHARQ-Processes-1 + HPID-offset where if harq-procID-offset is configured HPID-offset is equal to harq-procID-offset, and HPID-offset is zero otherwise.*

*b) Introduce a new field cg-HARQ-Processes in ConfiguredGrantConfig. The available HARQ process IDs for a CG config, when cg-RetransmissionTimer is configured, is given by cg-HARQ-Processes.*

*=> FFS*

*Proposal 21 In an SpCell, do not transmit in the uplink, besides as part of the RA procedure, when consistent LBT failure has been triggered and not cancelled in the SpCell.*

- Samsung things that we have this situation in Rel-15 and we didn’t do anything.

- Lenovo clarifies that until after the successful RA the eNB doesn’t know which UE is transmitting and therefore any UL transmissions will be interference. We missed this in Rel-15 so we should fix it for rel-16

*=> FFS*

Proposal 22 RAN2 to select:

a) When SUL is configured, autonomous BWP switch in SpCell due to consistent LBT failure shall select either NUL or SUL for RA as in Rel-15.

b) When SUL is configured, monitor consistent LBT failures separately in NUL and SUL and do BWP switch in the respective carrier if consistent LBT failure is triggered.

- Huawei thinks b) is more appropriate. Interdigital confirms this is an issue and b) is appropriate.

- Nokia thinks this is an optimization.

- ZTE also thinks this is an optimization and is not even sure if it useful for NR-U.

=> *FFS*

### 6.2.2 User plane

**To be discussed over email officially kicked off during e-meeting week (as offline email discussion) and treated the second slot, Week of March 2nd:**

[R2-2001911](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2001911.zip) NR-U UP Summary for RACH and UL LBT InterDigital discussion Rel-16 NR\_unlic-Core

[Offline discussion 501]

|  |
| --- |
| **Agreements**   1. CAPC selection for transmission of the PUSCH payload of MsgA follows the same mechanism defined for UL CG transmissions. 2. Send an LS to RAN1 to inform on CAPC selection for transmission of the PUSCH payload of MsgA. 3. One SR configuration (SR id) can be configured for SRs triggered by UL LBT failure detection on SCell; the SR configuration can be shared with other LCHs. RACH is triggered if this SR config id is not configured. 4. the UE shall stop any ongoing RA procedure and initiate a new RA procedure after BWP switching caused by LBT failure detection on SpCell. (Consensus) 5. Proposal 13: UE cancels all UL LBT failures triggered for a SCell upon deactivation of the SCell. 6. UE cancels triggered UL LBT failures, if any, upon MAC reset affecting the corresponding serving cell. 7. : a UE in connected mode monitors PDCCH addressed to C-RNTI in addition to the MsgB-RNTI, if LBT fails only for the payload part of MsgA (no spec changes required) 8. Send an LS to asks RAN1 to capture the validation of indicated following on indicating the SFN LSBs in TS 38.213: a downlink assignment is valid for successful RAR reception if the two LSB bits of the SFN indicated in DCI format 1\_0 scrambled by RA-RNTI or msgB-RNTI correspond to the PRACH occasion used to transmit the Random Access Preamble 9. Add a clarification in section 5.1.4 of TS 38.321:   1> else if a valid (as specified in TS 38.213 [6]) downlink assignment has been received on the PDCCH for the RA-RNTI and the received TB is successfully decoded:   1. the LBT Failure MAC CE has higher priority than BSR MAC CE, but lower priority configured grant confirmation MAC CE and BFR MAC CE. 2. UE cancels an UL LBT failure triggered for SpCell upon successful completion of the RA procedure initiated after BWP switching due to the detected LBT failure. (14/18) 3. UE cancels a triggered UL LBT failure upon BWP switching on the corresponding serving cell caused by reception of BWP switching DCI or RRC signalling. 4. The UE cancels a triggered UL LBT failure for SCell upon successful transmission of an LBT failure MAC CE indicating the cell, where transmission is successful only if LBT was successful at PHY 5. The UE cancels a pending SR triggered by UL LBT failure upon successful transmission of an LBT failure MAC CE indicating the cell, where transmission is from MAC perspective (i.e. regardless of LBT outcome at PHY) 6. The UE can transmit any uplink transmission upon BWP switching due LBT failure on SpCell, no specification changes are required. 7. UL LBT failure is cancelled if lbt-FailureRecoveryConfig IE is reconfigured for SCell. FFS for SpCell. 8. UE can switch only to BWPs with PRACH on the same UL (e.g. NUL or SUL) on which UL LBT failure was detected, upon detecting an LBT failure on SpCell 9. An additional short format for the LBT failure MAC CE with one octet is introduced 10. The following issues summarized in [R2-2001911](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001911.zip) are not pursued in Rel-16 (no changes to running CRs)  * 2.3.1 COT sharing after MsgB transmission * 2.3.2 Impacts of SSBs with same QCL relations on RACH * 2.3.3 Cancelling MsgA-PUSCH after PRACH LBT failure * 2.3.4 changes to 2-step vs. 4-step RACH selection * 2.3.5 early RAR window termination * 2.3.6 UE Autonomous BWP switching * 2.3.7 Additional PRACH transmission opportunities * Prioritization of SR triggered for LBT failure MAC CE vs. other overlapping SRs * 3.3.2 LBT Failure MAC CE transmission on difference cell for failure detected on SpCell * 3.3.3 CAPC of LBT failure MAC CE * 3.3.4 Counting LBT Failure on a multi-subband BWP * 3.3.5 Consistent UL LBT failure during HO * 3.3.6 LBT Failures in Non-Connected State and PCell Failure Recovery * 3.3.7 LBT Failure reporting during RRC Reestablishment |

*Set of proposals with no clear consensus but essential for Rel-16 completion – Discuss this in our online session:*

*Set of open issues and proposals that can be postponed to next meeting if not agreed:*

*Proposal 11: the UE can transmit any uplink transmission upon BWP switching due LBT failure on SpCell, no specification changes are required. (8/17)*

*Rapporteur comment: Proposal is written given there is no majority and option 2 requires no specification changes. Some network vendors don’t seem to be concerned with UL interference issues caused by UE-initiated BWP switching (as in R15).*

- Lenovo is concerned that the gNB doesn’t know this is happening and it might increase the interruption time at BPW and this is against how we designed the Rel-15 BWP switching. ZTE agrees with Lenovo.

- Mediatek also thinks that this is left up to the network configuration and there is no technical issue. Samsung agrees with Mediatek. Ericsson agrees that the network can fix this issue by the network avoiding allocating the resources to other UEs.

- Oppo is good with Proposal 11

=> Companies can think if there is a problem and if there is majority view that there is a problem we can come back to next meeting.

Proposal 16: UE cancels all UL LBT failures triggered for a SCell upon reconfiguration of the SCell. (10/16)

- Nokia thinks we should only capture the cases that the NW cannot deduce. Interdigital and lenovo also don’t understand. Samsung also agrees.

- Qualcomm and Ericsson think it is too complicated if we go into details of the configuration.

- Nokia thinks that we have the same think in the MAC as the BFR. Qualcomm explains that if anything changes that impacts LBT failure.

- Samsung thinks that this is too broad and maybe we can just rephrase to LBT failure.

Proposal 17: UE cancels a triggered UL LBT failure upon MAC reconfiguration affecting the corresponding serving cell. (10/16)

- Nokia thinks this is worst performance than not canceling and maybe this is better than proposal 16.

- UL LBT failure is cancelled lbt-FailureRecoveryConfig IE is reconfigured

Flagged for discussion:

Send an LS to asks RAN1 to capture the validation of indicated following on indicating the SFN LSBs in TS 38.213: -If configured response window size is > 10ms, a downlink assignment is valid for successful RAR reception if the two LSB bits of the SFN indicated in DCI format 1\_0 scrambled by RA-RNTI or msgB-RNTI correspond to the PRACH occasion used to transmit the Random Access Preamble (11/17)

- Samsung thinks that we should also capture that this only applies if the RAR window is extended beyond 10ms or at least capture in meeting minutes that ‘for RAR window size of <=10ms, UE implementation may choose not to compare the LSBs of SFN as there is no collision in this case. Others don’t think this is an issue

- LG is concerned that the UE doesn’t have the SFN of the new cell when doing RACH for HO case. Others don’t think this is an issue and RAN1 can continue discussing.

- Qualcomm is concerned about the case for another UE the window size it is larger than 10ms. Samsung explains that it is not possible for the same BWP.

=> For RAR window size of <=10ms, UE implementation may choose not to compare the LSBs of SFN as there is no collision in this case

[R2-2002196](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002196.zip) LS to RAN1 on random access procedure in NR-U InterDigital

=> The LS is approved

[R2-2002029](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002029.zip) NR-U UP Summary for CG and Others AI OPPO discussion Rel-16 NR\_unlic-Core

[Offline discussion 502]

**Agreements**

1. A new timer to consider the DFI as invalid is not introduced.
2. Repetitions across multiple CG configurations are not supported in this release.
3. It’s up to UE implementation on selecting retransmissions, no prioritization is introduced in this release.
4. When CG type 2 (re-)activation DCI is received, UE implementation selects a HARQ process (as agreed), and stops the CGRT and CGT associated with the selected HARQ process, if running.
5. Proposal 7: As already agreed, UE prioritizes retransmission over new transmission. No further optimizations dealing with the transmission of confirmation MAC CE will be considered.
6. The UE uses RV zero for the initial transmission. The RV selection for auto-retransmission is left up to UE implementation, as for feLAA.
7. Confirm that for NR-U, when a MAC PDU contains both data from DTCHs and MAC CEs, the UE selects the CAPC of the lowest priority logical channel with MAC SDUs multiplexed (i.e. priority of multiplexed MAC CEs is not taken into account). No changes required to 38.300.
8. Extend the UE CAPC selection to MsgA PUSCH transmission, Msg3 PUSCH transmission and other UL transmission case where CAT4 is indicated but CAPC is not signaled explicitly.
9. When UE performs auto-retransmission on a different CG configuration with the same TBS, it will not consider the LCP restriction.
10. RAN2 postpones the PHR ambiguity issue to future releases.
11. As a baseline, NR-U features are applied to unlicensed operation. Whether the NR-U specific features can be applied to licensed operation has to be discussed on a case-by-case basis (likely in the main session).
12. With the nrofHARQ-Processes and HPID-offset (introduced in IIoT), UE is allowed to select HPID given by [harq-procID-offset, harq-procID-offset + 1, …, harq-procID-offset + nrofHARQ-Processes – 1]. Understanding is that there is only impact to RRC specification.
13. Add this behaviour as NOTE: the UE is allowed to map generated TB(s) internally to different HARQ processes in case of LBT failure(s), i.e. UE may transmit a new TB on any HARQ process in the grants that have the same TBS, the same RV and the NDIs indicate new transmission.
14. The following optimizations from section 2.5 in [R2-2002029](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002029.zip) will not be addressed in Rel-16:

* “UE should switch to a SS group with denser PDCCH occasion when BWP is switched due to initiation of Random Access procedure or consistent UL LBT failure”.
* “allow SR transmission on the PUCCH resource colliding with the UL-SCH resource for which LBT fails”. (15/15) “enhance the DL opportunity based on the channel busy level dynamically measured by both UE and gNB”.
* MAC impacts (if any) of multiple CCAs in wideband larger than 20MHz.

**Discussion online**

*Proposal 5 With the nrofHARQ-Processes and HPID-offset (introduced in IIoT), UE is allowed to select HPID given by [harq-procID-offset, harq-procID-offset + 1, …, harq-procID-offset + nrofHARQ-Processes – 1]. (9/17)*

- Nokia wants to clarify that this would only impact the RRC. Oppo confirms that this only impacts the RRC paraments. Lenovo had the same concerns. Qualcomm explains that the partitioning will be captured in the field description. Nokia thinks it is quite simple.

*Proposal 9 RAN2 try to agree “For multi-TTI UL grant, UE is allowed to map generated TB(s) internally to different HARQ processes in case of LBT failure(s), i.e. UE may transmit a new TB on any HARQ process in the grants that have the same TBS, the same RV and the NDIs indicate new transmission.” (7/17), otherwise we revert the agreement (7/17).*

- Nokia thinks we can remove this from the specification. Ericsson thinks that this is a UE implementation. Mediatek, LG, and Intel agrees with Nokia. Lenovo thinks that it is anyways to UE implementation. It says that the UE is allowed.

- Nokia thinks that we should discuss this when we talk about PHR. Lenovo explains that this is dynamic grant.

- Mediatek The PHR issue will exist in any place where we move TB to a different TTI - regardless of CG/DG

#### 6.2.2.1 RACH

Aspects of 2/4 step RACH procedure specific to unlicensed operation; including supporting extended RAR window, and LBT impact.

ONLY NEW CRITICAL OPEN Issues that are not identified in email discussions. Contributions should NOT discuss open issues in the email discussion

**This will not be treated**

[R2-2000145](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000145.zip) Further Consideration on RACH Procedure in NR-U vivo discussion [R2-1914370](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1914370.zip)

[R2-2000146](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000146.zip) Issue on the Autonomous BWP Awitching in NR-U vivo discussion [R2-1914366](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1914366.zip)

[R2-2000147](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000147.zip) LBT Impacts on 2-step RACH vivo discussion [R2-1914368](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1914368.zip)

[R2-2000416](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000416.zip) 2-step RACH for NR-U OPPO discussion Rel-16 NR\_unlic-Core

[R2-2000771](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000771.zip) RA procedure considering SSBs with QCL relationship Fujitsu discussion Rel-16 NR\_unlic-Core

[R2-2000851](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000851.zip) MSGA PUSCH LBT failure and PDCCH decoding Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_unlic-Core

[R2-2000958](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000958.zip) Remaining issue on 2-step random access in NRU Huawei, HiSilicon discussion Rel-16 NR\_unlic-Core

[R2-2001208](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001208.zip) Remaining issues on RACH Ericsson discussion NR\_unlic-Core

[R2-2001209](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001209.zip) Gapless msgA transmissions in NR-U Ericsson discussion NR\_unlic-Core

[R2-2001449](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001449.zip) Additional opportunity for Msg1 in 4-step RACH LG Electronics Polska discussion Rel-16 NR\_unlic-Core [R2-1915920](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915920.zip)

[R2-2001606](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001606.zip) Consideration for C-RNTI monitoring in NR-U LG Electronics Polska discussion Rel-16 NR\_unlic-Core

#### 6.2.2.2 Handling UL LBT failures

Including detection, recovery, and reporting a consistent UL LBT failure

ONLY NEW CRITICAL OPEN Issues that are not identified in email discussions. Contributions should NOT discuss open issues in the email discussion

**This will not be treated**

[R2-2000148](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000148.zip) Remaining Issues of UL LBT Failure vivo discussion [R2-1914367](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1914367.zip)

[R2-2000415](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000415.zip) Remaining issues on consistent uplink LBT failure for NR-U OPPO discussion Rel-16 NR\_unlic-Core

[R2-2000449](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000449.zip) Remaining issues on UL LBT failures handling Intel Corporation discussion Rel-16 NR\_unlic-Core

[R2-2000534](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000534.zip) LBT failure handling considering SUL aspect Samsung discussion Rel-16 NR\_unlic-Core

[R2-2000563](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000563.zip) LBT Failures Handling in Non-Connected State Spreadtrum Communications discussion [R2-1915015](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915015.zip)

[R2-2000603](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000603.zip) SpCell LBT Failure MAC CE Delivery Apple, vivo discussion Rel-16 NR\_unlic-Core

[R2-2000737](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000737.zip) Handling of consistent UL LBT failures during HO ITRI discussion NR\_unlic-Core [R2-1913064](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1913064.zip)

[R2-2000772](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000772.zip) [Eri10] SR resources for consistent LBT failure Fujitsu discussion Rel-16 NR\_unlic-Core

[R2-2000822](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000822.zip) UE behavior upon consistent LBT failure Lenovo, Motorola Mobility discussion Rel-16 NR\_unlic-Core

[R2-2000840](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000840.zip) Remaining issues on consistent LBT failures and BWP switching MediaTek Inc. discussion Rel-16 NR\_unlic-Core

[R2-2000904](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000904.zip) On counting the LBT failure of a BWP with multiple sub-bands CMCC discussion Rel-16 [R2-1915197](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915197.zip)

[R2-2000941](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000941.zip) Uplink transmission upon detection of LBT failure Nokia, Nokia Shanghai Bell discussion Rel-15 NR\_unlic-Core

[R2-2000957](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000957.zip) Remaining issue on handling UL LBT failure Huawei, HiSilicon discussion Rel-16 NR\_unlic-Core

[R2-2000963](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000963.zip) Remaining issues on LBT failure MAC CE Huawei, HiSilicon discussion Rel-16 NR\_unlic-Core

[R2-2000999](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000999.zip) The remaining issues for UL LBT failure ZTE Corporation, Sanechips discussion Rel-16

[R2-2001207](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001207.zip) Handling consistent UL LBT failures Ericsson discussion NR\_unlic-Core

#### 6.2.2.3 Configured grant operation

Including HARQ aspects, configuration aspects, multiple active configured grants, and conflicts between dynamic and configured grants (NR-U specific).

ONLY NEW CRITICAL OPEN Issues that are not identified in email discussions. Contributions should NOT discuss open issues in the email discussion

**This will not be treated**

[R2-2000417](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000417.zip) Remaining issues on NR-U configured grant OPPO discussion Rel-16 NR\_unlic-Core Late

[R2-2000821](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000821.zip) HARQ process configuration for configured grants Lenovo, Motorola Mobility discussion Rel-16 NR\_unlic-Core

[R2-2000841](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000841.zip) Issues on retransmissions across different configured grant configurations MediaTek Inc. discussion Rel-16 NR\_unlic-Core

[R2-2000959](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000959.zip) Remaining issue on configured grant Huawei, HiSilicon discussion Rel-16 NR\_unlic-Core

[R2-2001205](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001205.zip) Configured Grant remaining issues Ericsson discussion NR\_unlic-Core

[R2-2001206](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001206.zip) Channel access priority for Configured Grant Ericsson discussion NR\_unlic-Core

[R2-2001442](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001442.zip) Consideration of delayed CG confirmation LG Electronics Polska discussion Rel-16 NR\_unlic-Core

#### 6.2.2.4 Other

Includes wideband operation aspects, HARQ, SR and PHR

ONLY NEW CRITICAL OPEN Issues that are not identified in email discussions. Contributions should NOT discuss open issues in the email discussion

**This will not be treated**

[R2-2000149](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000149.zip) Remaining Issues on CAPC Selection for Configured Grant vivo discussion

[R2-2000154](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000154.zip) Consideration on SR transmission colliding with PUSCH transmission Xiaomi Communications discussion Rel-16 [R2-1915956](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915956.zip) Late

[R2-2000172](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000172.zip) Consideration on SR transmission colliding with PUSCH transmission Xiaomi Communications discussion Rel-16 [R2-1915956](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915956.zip) Late

[R2-2000173](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000173.zip) Consideration on SR transmission colliding with PUSCH transmission Xiaomi Communications discussion Rel-16 [R2-1915956](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915956.zip)

[R2-2000176](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000176.zip) Remaining issues of CAPC Huawei, HiSilicon discussion Rel-16 NR\_unlic-Core

[R2-2000535](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000535.zip) Applicability of NR-U features to licensed carrier Samsung discussion Rel-16 NR\_unlic-Core [R2-1915222](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915222.zip)

[R2-2000669](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000669.zip) LBT failure measurement report handling Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_unlic-Core

[R2-2000838](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000838.zip) PHR for NR-U Lenovo, Motorola Mobility discussion Rel-16 NR\_unlic-Core

[R2-2000842](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000842.zip) On PHR and autonomous retransmissions MediaTek Inc. discussion Rel-16 NR\_unlic-Core [R2-1913262](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1913262.zip)

[R2-2000960](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000960.zip) PHR reporting for NR-U Huawei, HiSilicon discussion Rel-16 NR\_unlic-Core

[R2-2000961](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000961.zip) Reply LS on PHR report Huawei, HiSilicon discussion Rel-16 NR\_unlic-Core

[R2-2000962](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000962.zip) Disucssion PDCCH group switching Huawei, HiSilicon discussion Rel-16 NR\_unlic-Core

[R2-2001094](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001094.zip) CAPC selection for UL transmissions Intel Corporation discussion Rel-16 NR\_unlic-Core

[R2-2001108](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001108.zip) Remaining CAPC aspects for CG when SRB is multiplexed NEC Telecom MODUS Ltd. discussion

[R2-2001204](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001204.zip) Remaining issue on PHR Ericsson discussion NR\_unlic-Core

[R2-2001450](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001450.zip) Dynamic DL opportunity enhancement based on channel busy level in NR-U LG Electronics Polska discussion Rel-16 NR\_unlic-Core [R2-1915921](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915921.zip)

[R2-2001451](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001451.zip) MAC impacts of multiple CCAs in wide band operation LG Electronics Polska discussion Rel-16 NR\_unlic-Core [R2-1916153](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1916153.zip)

### 6.2.3 Control plane

**To be discussed over email (as offline email discussion) and treated the second slot, Week of March 2nd.**

[R2-2002022](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002022.zip) NR-U Control Plan Summary Qualcomm Incorporated discussion Rel-16 NR\_unlic-Core

[Offline discussion 503]

**Agreements**

1. From RAN2 perspective, a capability for 2-step RACH for NR operation in shared spectrum is needed. It is noted that this may already be supported by the 2-step RACH capability if signalled per band.
2. A UE capability for consistent UL LBT detection and recovery is introduced. It is FFS if separate capabilities are needed for PCell, PSCell, and SCells (which have different recovery mechanisms).
3. For now do not introduce a new list for signalling of neighbour cells Qs in SIB3 and SIB4 (no changes to the running CR). Further optimization or efficient signalling can be considered during ASN.1 review.
4. RAN2 will not introduce a solution in Rel-16 to address potential issue due to operation of both licensed and shared spectrum in 6Ghz. RAN2 assumes that it is up to RAN1/RAN4 to provide a solution if needed.
5. If IntraFreqReselection in MIB is set “not allowed” and the UE is not able to decode SIB1, it will not bar this frequency, i.e. will continue cell reselection on the frequency. No changes to the running CR are needed.
6. RAN2 should inform RAN4 that there is no “withdraw” procedure for abandoning reporting of measurement results and introduction of such a mechanism will have significant impacts on RAN2 specifications; therefore suggest that RAN4 should not agree to UE abandoning the measurement report due to delay caused by LBT failures.
7. Introduce signalling of “Q” in 36.331 in measurement configuration and SIB(s) to enable Connected and Idle/Inactive mode mobility from E-UTRAN to NR-U.
8. Do not introduce a new MIB for NR-U.
9. Confirm that the UE stops paging monitoring when it receives any type of short message. No changes to the running CRs are introduced except for removing the FFS on this.
10. Change the location of measRSSI-ReportConfig-r16 so that it is located in both PeriodicalReportConfig and EventTriggerConfig.
11. From RAN2 point of view, there is no NR-U specific issue for the handling of forbidden TAs. No changes are introduced to the running 38.304 CR for handling of forbidden TAs.
12. No new RLF trigger based on missing downlink reference signals (due to LBT failure) is introduced.
13. No changes to cell selection based on LBT failures are introduced. It is up to UE implementation to handle RLF due to LBT failures in cell selection.
14. . No changes to SUL selection are introduced for NR-U.
15. Keep the RAN2#107bis agreement that no new triggers for RSSI/CO are introduced for CHO in Rel-16.
16. Replace NR-U with “NR operation with shared spectrum channel access” as used in RAN1 specifications. A formal definition of “shared spectrum” may be introduced in stage-2 by either RAN1 and RAN2 if needed (e.g. a spectrum where the procedures in TS 37.213 are applicable).
17. On signalling default and no guard bands, we will try to follow RAN1 agreements, if nothing is signalled default is used. Details are discussed during running CR.

*For discussion flagged from offline :*

*Proposal 3: Do not introduce a new list for signalling of neighbour cells Qs in SIB3 and SIB4 (no changes to the running CR). (supported by 13 out of 15 companies)*

- Ericsson thinks that adding extensions after “. . .” costs 2-3 bytes. Also, signaling of the mandatory cell individual offset costs 5 bits plus signaling of the optionality bits for the three other optional fields costs three bits. So, in total 4 bytes of unnecessary signaling in a neighboring cell list in system information compared to defining new lists.

*Set of proposals with no clear consensus but essential for Rel-16 completion – Discuss this in our online session:*

Proposal 11. RAN2 further discuss how to signal default and no guard bands (a compromise option could be to have explicit IEs for both no guard band and default case).

- Qualcomm thinks a compromise can be explicit IEs for no guard band and default. Nokia explains that if nothing is configured then we have default.

On the new MIB

- Ericsson has concerns about not having new MIB.

[R2-2002203](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2002203.zip) LS to RAN4 on NR-U Qualcomm

=> The LS is approved in R2-2002300

#### 6.2.3.1 Mobility and RRM

Including camping and cell (re)-selection. Focus should be on idle and inactive mode mobility.  For connected mode  mobility solutions to be covered by the NR Mobility Enh WI are not to be discussed.

Note RP-191581: RRM Measurements beyond currently agreed ones have lower priority.

ONLY NEW CRITICAL OPEN Issues that are not identified in email discussions. Contributions should NOT discuss open issues in the email discussion

**This will not be treated**

[R2-2000151](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000151.zip) Short Message for Stopping Paging Monitoring in NR-U vivo discussion

[R2-2000336](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000336.zip) Remaining issues on Paging Ericsson discussion NR\_unlic-Core

[R2-2000337](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000337.zip) RRM in NR-U Ericsson discussion NR\_unlic-Core

[R2-2000403](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000403.zip) Handling of SIB1 decoding error Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_unlic-Core

[R2-2000405](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000405.zip) On RLM and RLF Issues in NR-U Mediatek Inc. discussion

[R2-2000670](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000670.zip) LS on LBT failure measurement report handling Nokia, Nokia Shanghai Bell LS out Rel-16 NR\_unlic-Core To:RAN4

[R2-2001546](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001546.zip) Cell selection after consecutive UL LBT failures LG Electronics Inc. discussion

[R2-2001547](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001547.zip) Support of conditional handover for NR-U LG Electronics Inc. discussion

#### 6.2.3.2 Other

Other control plane stage-3 aspects including system information. Note RP-191581: Enhancements for System Information has lower priority

ONLY NEW CRITICAL OPEN Issues that are not identified in email discussions. Contributions should NOT discuss open issues in the email discussion

RLM/RLF will not be treated in this meeting

**This will not be treated**

[R2-2000150](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000150.zip) UE Capability for NR-U Support vivo draftCR Rel-16 38.306 15.8.0 NR\_unlic

[R2-2000338](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000338.zip) Signaling of Q in NR-U Ericsson discussion

[R2-2000404](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000404.zip) Including RSSI and Channel Occupancy in NR-U UE Capabilities Mediatek Inc. draftCR Rel-16 38.306 15.8.0 C NR\_unlic, NR\_unlic-Core [R2-1914584](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1914584.zip)

[R2-2000418](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000418.zip) Stopping criteria for paging monitoring OPPO discussion Rel-16 NR\_unlic-Core

[R2-2000442](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000442.zip) UE Capabilities for Measurements in NR-U Mediatek Inc. discussion

[R2-2000671](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000671.zip) using spare from SIB1 Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_unlic-Core

[R2-2000672](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000672.zip) Q values per cell and useInterlacePUCCH coding Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_unlic-Core

[R2-2000673](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000673.zip) intraCellGuardBand coding Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_unlic-Core

[R2-2000905](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000905.zip) Further enhancement of reporting for NR-U cell reselection CMCC discussion Rel-16

[R2-2000964](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000964.zip) Discussion on the remaining issues in RRC signalling Huawei, HiSilicon discussion Rel-16 NR\_unlic-Core

[R2-2001422](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001422.zip) SUL Operating over NR-U Samsung discussion NR\_unlic-Core

[R2-2001432](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001432.zip) On Indicating LBT Failure for NR-U Samsung discussion NR\_unlic-Core

[R2-2001469](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001469.zip) Enhancements to MIB transmission OPPO discussion Rel-16 NR\_unlic-Core

[R2-2001548](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001548.zip) Stopping condition for paging monitoring LG Electronics Inc. discussion

[R2-2001549](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001549.zip) RLMRLF in NR-U LG Electronics Inc. discussion

## 6.11 UE Power Saving in NR

(NR\_UE\_pow\_sav-Core; leading WG: RAN1; REL-16; started: Mar 19; target; Mar 20; WID: [RP-191607](file:///C:\Data\3GPP\TSGR\TSGR_84\docs\RP-191607.zip), See also guidence in RP-192326). Documents in this agenda item will be handled in a break out session. NOTE: "SCell dormancy" like behaviour will be discussed in MR-DC WI.

Time budget: 1 TU

Tdoc Limitation: 4 tdocs

### 6.11.1 Organisational

Including incoming LSs, running TS, rapporteur inputs, etc

NOTE: any stage 3 identified issues with MIMO configurations should be provided to 38.331 rapporteur (Mediatek)

Contributions in this AI are reserved for WI rapporteur inputs and/or spec rapporteur inputs and do not count towards the tdoc limits.

38.306 can be submitted for informational purpose by rapporteur (Intel), but it will not be treated this meeting

Including outcome of the email discussion [108#39][Power Saving] Running 38.331 (Mediatek)

Including outcome of the email discussion [108#78][Power Saving] Running 38.321 (Huawei)

Including outcome of the email discussion [108#79][Power Saving] Running 38.304 (Vivo)

Including outcome of the email discussion [108#80][Power Saving] Running 38.300 (CATT)

Including outcome of the email discussion [108#81][Power Saving] Running 37.340 (Oppo)

**LS to be treated only if the contact company flags it for presentation. Otherwise, it is directly Noted**

[R2-2000017](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000017.zip) LS reply to RAN2 on WUS for short DRX cycle (R1-1913583; contact: CATT) RAN1 LS in Rel-16 NR\_UE\_pow\_sav-Core To:RAN2

=> Noted

[R2-2000098](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000098.zip) LS reply on CSI/SRS reporting (R1-1913480; contact: Vivo) RAN1 LS in Rel-16 NR\_UE\_pow\_sav-Core To:RAN2 Cc:RAN4

=> Noted

**The following CRs should be endorsed as baseline from email discussion and used to capture the additional agreements from the e-meeting**

[R2-2000364](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000364.zip) Running 38.304 CR on UE Power saving in NR vivo (rapporteur) CR Rel-16 38.304 15.6.0 0145 - B FS\_NR\_UE\_pow\_sav

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e, and moved for email discussion

=> The CR is revised in [R2-2002195](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002195.zip)

[R2-2002195](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002195.zip) Running 38.304 CR on UE Power saving in NR vivo (rapporteur) CR Rel-16 38.304 15.6.0 0145 1 B FS\_NR\_UE\_pow\_sav

=> The CR will be used as a baseline, will be revised to include all new agreements from week2 RAN2#109e, and continued as phase2 in email discussion

[offline discussion 515]

[R2-2000411](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000411.zip) Running CR to 37.340 for power saving OPPO CR Rel-16 37.340 16.0.0 0184 - B NR\_UE\_pow\_sav-Core

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e, and moved for email discussion

[R2-2000843](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000843.zip) Running CR for 38.331 for Power Savings MediaTek Inc. CR Rel-16 38.331 15.8.0 1469 - B FS\_NR\_UE\_pow\_sav [R2-1915548](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915548.zip) Late

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e, and moved for email discussion

=> The CR is revised in [R2-2002194](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002194.zip)

[R2-2002194](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002194.zip) Running CR for 38.331 for Power Savings MediaTek Inc. CR Rel-16 38.331 15.8.0 1469 1 B FS\_NR\_UE\_pow\_sav [R2-1915548](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915548.zip) Late

=> The CR will be used as a baseline, will be revised to include all new agreements from week2 RAN2#109e, and continued as phase2 in email discussion

[Offline discussion 516]

[R2-2000888](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000888.zip) Introduction of UE Power Saving in NR CATT CR Rel-16 38.300 16.0.0 0193 - B NR\_UE\_pow\_sav-Core

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e, and moved for email discussion

[R2-2001615](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001615.zip) Running CR for Introduction of Rel-16 NR UE power saving in TS 38.321 Huawei CR Rel-16 38.321 15.8.0 0699 - B NR\_UE\_pow\_sav-Core Late

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e, and moved for email discussion

From RAN2 point of view, the CR will be submitted for approval in plenary meeting. Stage 3 corrections and the FFS can be addressed in the April e-meeting. Further enhancements past the agreed FFS are not encouraged

**The following email discussions will be treated during the first slot of e-meetings**

[R2-2000844](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000844.zip) Email discussion summary on running 38.331 CR for Power Saving MediaTek Inc. discussion Rel-16 FS\_NR\_UE\_pow\_sav Late

=> Revised in [R2-2001912](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001912.zip)

[R2-2001912](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001912.zip) Email discussion summary on running 38.331 CR for Power Saving MediaTek Inc. discussion Rel-16 FS\_NR\_UE\_pow\_sav Late

|  |
| --- |
| **Agreements**   * 1. The UE assistance IE to transition out of connected mode is named ‘releasePreference’   2. The UE assistance configuration for power savings is released during the RRC resume procedure.   3. A UE can report a preference of 0MHz aggregated bandwidth for power savings.   4. The reported long DRX-cycle preference is a multiple of the reported short DRX-cycle preference   5. The search space for DCP can be configured independent of search spaces for Rel-15 DCIs   6. The search space for DCP can be configured such that it is also used to monitor other Rel-15 DCIs. FFS the details of ASN.1   7. The prohibit timer for UE assistance on DRX, aggregated bandwidth, number of cell, number of MIMO layers, releasePreference and minimum scheduling offset for power savings can be configured up to 30s.   8. All fields in the DRX-Preference IE in the UE assistance information message are optional fields. FFS what it means when the UE omits the value and what it means   9. All fields in the MinSchedulingOffsetPreference IE in the UE assistance information message are optional fields.   FFS what it means when the UE omits the values and what it means   * 1. If a UE wants to cancel an earlier indicated preference to leave connected mode, the UE can transmit a release preference IE with a connected mode state preference, when not prevented by a prohibit timer   11. A UE can report a preference of one layer as the minimum number of preferred DL MIMO layers for the downlink.  12. The reported values of UE assistance on reduced bandwidth, cells and MIMO layers for power savings can range up to at least the corresponding value in the current active configuration. FFS if it can be up to UE capability  13. A UE can report a preferred aggregated bandwidth for a frequency range on the configured serving cell. FFS if it is allowed even if it is not configured with serving cells on that frequency range  14. FFS The releasePreference IE optionally contains a releaseIndication field (connected or out of connected) and a preferredRRC-State field (idle or inactive) |

***To be agreed with some discussions hopefully:***

Proposal 3: If a UE wants to cancel an earlier indicated preference to leave connected mode, the UE can transmit a release preference IE with a connected mode state preference, when not prevented by a prohibit timer

- Ericsson would like to keep simple and make it work. Ericsson doesn’t understand how this works and if the NW implements it would immidietally release and the UE wouldn’t have a chance to change an update. ZTE has the same opinion.

- LG thinks this it would be good to avoid unnecessary transmission.

- CATT thinks that the timer set to infinity would allow the network to configure the UE such that it doesn’t report again.

***Requires some discussion***

Proposal 4: The reported values of UE assistance on reduced bandwidth, cells and MIMO layers for power savings can range up to the corresponding value in the UE’s capability, and is independent of the current active configuration.

- Ericsson doesn’t think more than current configuration is justifiable and are very reluctant to allow this. Nokia, Xiaomi, agrees with Ericsson. Xiaomi is not sure how the UE can tell which method is better for power consumption.

[R2-2001616](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001616.zip) Report of email discussion [108#78][Power Saving] 38.321 open issues Huawei report Rel-16 NR\_UE\_pow\_sav-Core

|  |
| --- |
| **Agreements**   1. RAN2 to confirm the MAC-PHY modelling in the MAC running CR for DCP   Send LS to RAN1 to inform the RAN2 understanding   1. RAN2 does not expect to discuss partial overlapping for DCP monitoring and will following RAN1 CR on this issue 2. No special handling for DCP monitoring in case DCP is overlapped with HARQ-RTT-timer, i.e. DCP needs to be monitored 3. ps-TransmitPeriodicCSI-r16 and ps-TransmitPeriodicL1-RSRP-r16 can be configured independently 4. FFS ps-TransmitPeriodicCSI-r16 covers periodic CSI reporting apart from L1-RSRP related CSI (i.e. cri-RSRP and ssb-Index-RSRP) - ask RAN1 what the intention in the LS [R2-2001617](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001617.zip) |

FFS on this proposal (two separate issues in Pierre’s summary, this proposal and additional aspects) The 4ms DRX ambiguous period introduced in Rel-15 does not apply to DCP

*Proposal 4: [FFS]: DCP is not monitored in case DCP is overlapped with RAR window. onDuration timer for the next DRX cycle is started (i.e. apply existing monitoring rules).*

- Mediatek considers that the DRX and RAR is independent and we should keep things the same.

- Nokia asks can the UE decode both the RA-RNTI and PS-RNTI when RAR window is on. Lenovo has the same concerns and ask if the UE would monitor the same search space.

- Qualcomm thinks that if it is configured the UE can monitor both search spaces and if not configured it can monitor only RA-RNTI. Qualcomm is concerned that the NW doesn’t know whether the UE is doing RACH. Vivo thinks that for beam failure recovery we should treat it similar to WUS in active time.

=> Move to offline discussion (Pierre)

**Postpone until next meeting**

[FFS]: Confirm that short DRX cycle is not supported for DCP. Remove corresponding Editor’s Note in MAC running

[R2-2001617](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001617.zip) [Draft] LS on MAC-PHY modelling for DCP Huawei LS out Rel-16 NR\_UE\_pow\_sav-Core To:RAN WG1 Late

=> The LS is moved to email discussion

=> The LS is revised in [R2-2002192](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002192.zip)

[R2-2002192](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002192.zip) [Draft] LS on MAC-PHY modelling for DCP Huawei LS out Rel-16 NR\_UE\_pow\_sav-Core To:RAN WG1

=> The LS is revised in [R2-2002193](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002193.zip)

[R2-2002193](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2002193.zip) [Draft] LS on MAC-PHY modelling for DCP Huawei LS out Rel-16 NR\_UE\_pow\_sav-Core To:RAN WG1

=> The LS is revised in [R2-2002197](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002197.zip)

[R2-2002197](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002197.zip) [Draft] LS on MAC-PHY modelling for DCP Huawei LS out Rel-16 NR\_UE\_pow\_sav-Core To:RAN WG1

=> Fix the typo

=> The LS is approved in [R2-200](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002201.zip)2201

[R2-2000365](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000365.zip) Report of EmailDisc-79 on open issues for RRM measurement relaxation vivo (rapporteur) discussion Rel-16 FS\_NR\_UE\_pow\_sav

=> Revised in [R2-2002100](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002100.zip)

[R2-2002100](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002100.zip) Report of EmailDisc-79 on open issues for RRM measurement relaxation vivo (rapporteur) discussion Rel-16 FS\_NR\_UE\_pow\_sav

|  |
| --- |
| **Agreements**   1. The network broadcasts corresponding parameters of relaxation triggering criteria to enable RRM measurement relaxation feature. 2. When network configures the parameters of both low mobility and not-at-cell-edge criteria. UE can perform measurement relaxation according one of the following options, which is indicated by the network:   - Option a: UE uses both low mobility criterion and not-at-cell-edge criteria, i.e. UE can perform relaxation only when both criteria are fulfilled. And detailed relaxation behaviour is up to RAN4 discussion and decision;  - Option b: UE uses either low mobility criterion or not-at cell-edge criterion, i.e. UE can perform relaxation when either low mobility or not-at-cell-edge criterion is fulfilled. And detailed relaxation behaviours are same as case that network only configures low mobility or not-at-cell-edge criterion;   1. The values of parameter SSearchDeltaP are 3, 6, 9, 12, 15 dB. 2. The infinity value for parameter SSearchDeltaP is not needed. 3. When network configures both RSRP and RSRQ thresholds for not-at-cell-edge criterion, UE can perform relaxation only when both RSRP and RSRQ based criteria are met. 4. Srxlev/Squal (Cell selection RX level value (dB)) is used to compare with threshold SsearchThresholdP/ SsearchThresholdQ. The corresponding text has been updated in running 38.304 CR. 5. The threshold SsearchThresholdP/ SsearchThresholdQ reuse the value range of ReselectionThreshold/ReselectionThresholdQ or RSRP-Range/RSRQ-Range 6. An LS is sent to RAN4 on RAN2 conclusions for the RRM measurement relaxation and ask RAN4 to discuss the measurement relaxation approach(es). 7. The parameter SrxlevRef is set according to the LTE mechanism as captured in current running 38.304 CR for power saving 8. FFS on RAN4 - if and what parameters we need (e.g. time interval for measurement relaxation since last measurement for cell reselection and the value range for the time interval) |

**RRC rapporteur should be able to use this as a baseline and companies can provide further views over email**

Proposal 1: The terminology of relaxed measurement (i.e. option 2) is used for RRM measurement relaxation in NR.

Proposal 4: The IE highPriorityMeasRelax is defined as an optional fieldIE with the value of “ENUMERATED {true}” to configure higher priority frequencies can be relaxed.

Proposal 17: The parameter SSearchDeltaP is optional and default value can be 6dB.

Proposal 7: If the indication highPriorityMeasRelax is optional and when it is not present, the legacy behaviour should be followed, i.e. no measurement relaxation is performed on the high priority frequency.

Proposal 9: If proposal 8 is agreeable, this “and/or” indication is mandatory if network configures the parameters of both low mobility and not-at-cell-edge.

Proposal 12: The parameter TSearchDeltaP is optional, and the default value can be 1 minute or 60s.

Proposal 20: Whether the parameter SsearchThresholdP/SsearchThresholdQ is optional or mandatory if RRM measurement relaxation is supported can be discussed during the meeting after the decision on Proposal 2.

Proposal 11: RAN2 have a short discussion on the detailed values and the granularity for parameter TSearchDeltaP:

- Option 2: Values in number of seconds, e.g. 5s, 10s, 20s, 30s, 60s, 120s, 180s, 240s, and 300s.

**To discuss and agree**

Proposal 3: Per-frequency configurationindication should be is supported for RRM measurement relaxation. FFS on per-FR or per-frequency.

- Huawei asks what is the use case and wouldn’t the absolute priorities deal with it. Ericsson doesn’t see the need for see. LG thinks that it is not that difficult.

- Sony, Samsung, agrees with Huawei and Ericsson

**FFS – postpone to discuss next meeting**

Proposal 21:

**This is postponed to wait for RAN4**

Proposal 5: RAN2 to discuss whether the measurement relaxation for high priority frequency indicated by highPriorityMeasRelax is controlled by the triggering criteria for measurement relaxation and check with RAN4 how RAN4 will make use of it:

Baseline for option 2 for now - This indication is associated with the triggering criteria

If highPriorityMeasRelax is present (or =true)

• If (low mobility and/or not-at-cell-edge) criterion is met, the UE can perform relaxed measurement for higher priority frequency; How to relax measurement for higher priority frequency is up to RAN4 decision.

Otherwise:

• The UE will not perform relaxed measurement for higher priority frequency regardless whether the trigger criterion is met. The measurement requirement for higher priority frequency should follow the legacy defined in 38.133.

[R2-2001926](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001926.zip) LS to RAN4 on RAN2 agreements on RRM Vivo

=> The LS is revised in [R2-2002198](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002198.zip)

[R2-2002198](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002198.zip) LS to RAN4 on RAN2 agreements on RRM Vivo

[Offline discussion 524]

**Response LSs should be agreed by email discussion if we decided they are needed**

[R2-2000366](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000366.zip) Draft LS to RAN4 on RRM measurement relaxation in power saving vivo LS out Rel-16 FS\_NR\_UE\_pow\_sav To:RAN4

[R2-2001617](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001617.zip) [Draft] LS on MAC-PHY modelling for DCP Huawei LS out Rel-16 NR\_UE\_pow\_sav-Core To:RAN WG1 Late

[R2-2000452](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000452.zip) UE capabilities for Rel-16 UE power saving WI Intel Corporation discussion Rel-16 NR\_UE\_pow\_sav

[R2-2000453](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000453.zip) UE capabilities for Rel-16 UE power saving WI Intel Corporation CR Rel-16 38.306 15.8.0 0231 - B NR\_UE\_pow\_sav

### 6.11.2 PDCCH-based power saving signals/channel Additional stage-3 RAN2 aspects

ONLY NEW CRITICAL OPEN Issues that are not identified in email discussions. Contributions should not discuss open issues in the email discussion.

**To be discussed over email officially kicked off during e-meeting week (as offline email discussion) and treated the second slot, Week of March 2nd:**

[R2-2001913](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2001913.zip) Summary of open issues for PDCCH CATT

[Offline discussion 504]

|  |  |
| --- | --- |
| **Agreements**   1. The issue of capturing CSI reporting when the *drx-onDurationTimer* is not started due to DCP indication, but the MAC entity is in Active Time during on-duration due to other reasons will be addressed in MAC specification. 2. The TP in [R2-2000254](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2000254.zip) is used to capture the solution to agreement 1 in MAC. 3. No ambiguity period is needed when considering DCP for on-duration determination. 4. The below TP is used to capture agreement 3 in MAC.  |  | | --- | | 1> if DCP is configured for the active DL BWP:  2> in current symbol n, if the symbol occurs within *drx-onDurationTimer* duration and *drx-onDurationTimer* would not be running considering DCP occurrence(s) associated with the current DRX cycle ~~until [x] ms prior to symbol n~~ as specified in this clause:  3> not transmit periodic SRS and semi-persistent SRS defined in TS 38.214 [7];  3> not report semi-persistent CSI;  3> if *ps-Periodic\_CSI\_Transmit* is not configured with value *true*:  4> not report periodic CSI on PUCCH. |  1. Since DCP is only monitored outside Active Time, there is a 4-ms ambiguity period associated with the DCP monitoring, to be captured in MAC specification. Further agreements from RAN1 will be taken into account in the next meeting. 2. The TP in [R2-2001037](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001037.zip) is used as a baseline to capture Proposal 12 in MAC. 3. If DCP only applies when UE is in Long DRX, no change is needed to the current 38.321 CR to capture this behaviour. FFS whether DCP applies to short DRX 4. The UE behavior when it receives DCP regarding the monitoring of following DCP occasions is not addressed in RAN2. No change is needed to the current 38.321 CR for this issue, if any. 5. No change to the current specification is required to support notification of SI/PWS change when DCP is configured. 6. No mechanism for periodical wake up and/or always wake up in poor radio condition is specified to address DCP miss-detection 7. Given the split views in this session, the discussion on ASN.1 options for capturing the search space for the DCP is moved to the RRC/ASN.1 review. 8. No change to the specifications is required to address any potential DCP miss during handover. 9. The issue of network not being able to perform beam management actions when WUS has not indicated UE to wake-up but UE has transmitted CSI/SRS requires no change to current specifications. 10. The issue of the coexistence of DRX groups and Power Saving features will be addressed together with the main discussion on DRX groups support, following RAN1 reply LS. 11. Configuring the UE to report CSI/SRS in sparse mode, i.e. report once per N DRX cycles is not supported in the specifications. 12. FFS what the UE actually monitors if it misses DCP when configured with SCell dormancy 13. FFS UE behavior when a DCP occasion occurs during RAR window will be decided at the next meeting |

**Flagged for discussion:**

Proposal 6 (9/12): Configuring the UE to report CSI/SRS in sparse mode, i.e. report once per N DRX cycles is not supported in the specifications.

- Qualcomm is concerned because L1 RSRP reporting is different when there is traffic and when there is not. If traffic stops it is very power consuming to still do this L1 RSRP reporting.

FFS whether DCP applies to short DRX

**This will not be treated**

[R2-2000253](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000253.zip) Contributions summary on further impacts of DCP CATT discussion Rel-16 NR\_UE\_pow\_sav-Core Late

[R2-2000254](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000254.zip) New issue on CSI reporting with DCP CATT discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2000349](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000349.zip) Open issues DCP Ericsson discussion Rel-16 NR\_newRAT-Core

[R2-2000367](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000367.zip) PDCCH-WUS not applicable for short DRX cycle vivo discussion Rel-16 FS\_NR\_UE\_pow\_sav

[R2-2000368](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000368.zip) WUS impact on CSI reporting vivo discussion Rel-16 FS\_NR\_UE\_pow\_sav

[R2-2000412](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000412.zip) Remaining issues on DCP OPPO discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2000413](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000413.zip) Impacts of power saivng signalling on CSI reporting OPPO discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2000450](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000450.zip) Open issues of DCP feature Intel Corporation discussion Rel-16 NR\_UE\_pow\_sav

[R2-2000584](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000584.zip) PDCCH-WUS Mechanism Apple discussion Rel-16 NR\_UE\_pow\_sav-Core [R2-1915924](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915924.zip)

[R2-2000599](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000599.zip) PDCCH-WUS and Short DRX Cycle Apple discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2000665](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000665.zip) Discussion on introduction of search space for the DCP ZTE Corporation, Sanechips discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2000666](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000666.zip) Introduction of search space for the DCP in TS38.331 ZTE Corporation, Sanechips CR Rel-16 38.331 15.8.0 B NR\_UE\_pow\_sav-Core

[R2-2000811](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000811.zip) Discussion on PDCCH-WUS missing problems during handover Xiaomi Communications discussion

[R2-2001037](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001037.zip) On DRX ambiguous period Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2001038](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001038.zip) On DCP monitoring and CSI/SRS transmission Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2001040](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001040.zip) On short DRX cycle applicability for DCP Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2001300](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001300.zip) Consideration on Short DRX cycle on DCP LG Electronics Inc. discussion NR\_UE\_pow\_sav-Core

[R2-2001463](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001463.zip) Remaining issues on WUS signal for Power Saving ZTE Corporation, Sanechips discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2001482](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001482.zip) Wakeup signaling with DRX groups Qualcomm Inc, Samsung discussion Rel-16

### 6.11.3 UE assistance

Stage 3 details of reportings mechanisms for a UE to 1) indicate its preference of transitioning out of RRC\_CONNECTED state 2) c-DRX and 3) SCell

ONLY NEW CRITICAL OPEN Issues that are not identified in email discussions. Contributions should not discuss open issues in the email discussion

**To be discussed over email officially kicked off during e-meeting week (as offline email discussion) and treated the second slot, Week of March 2nd:**

[R2-2001914](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001914.zip) Summary of open issues for UE assistance Qualcomm

[Offline discussion 505]

**Agreements**

1. In MR-DC with NR SN, support SCG specific UAI for power saving, which includes drx-Preference, maxBW-Preference, maxCC-Preference, maxMIMO-LayerPreference, and minSchedulingOffsetPreference.
2. UE transmits SCG specific UAI for power saving in a transparent container to the MN and the MN then forwards the received container to the NR SN. FFS if UAI can also be reported for power saving directly via SRB3 if configured. FFS on the signalling details.
3. UE implicitly can indicate a preference for NR SCG release by indicating zero number of carriers or zero aggregated maximum bandwidth in both FR1 and FR2.
4. UE assistance for NR SCG setup is not supported in Rel-16.
5. Indication of “Connected” for cancelling a previous release preference is subject to prohibit timer.
6. Preferred carrier grouping for SCell dormancy is not supported in Rel-16

Potential discussion

Proposal 2. UE transmits SCG specific UAI for power saving in a transparent container to the MN and the MN then forwards the received container to the NR SN. (9 vs 6/3/2)

* 1. *Option 1 Report SCG specific UAI for power saving directly via SRB3 if configured;*
  2. *Option 2 Report SCG specific UAI for power saving in a transparent container to MN and the MN then forwards the received container to the NR SN;*
  3. *Option 3 Extend LTE’s UAI to include this NR UAI for power saving;*
  4. *Option 4 Include an indicator in the current NR UAI to indicate which CG it is intended for;*

**Proposals flagged for discussion**

Proposal 9. UE can indicate any preferred value within its UE capability for maximum aggregated bandwidth, number of carriers, MIMO layers and minimum scheduling offset. (10 vs 3)

Proposal 10. For a configured cell group, UE can indicate preferred maximum aggregated bandwidth for a frequency range not configured with SCells. (10 vs 3)

- Chair asks if there is a compromise to have a possibility to revert to “no preference” or to previous configuration.

Proposal 5. FFS if absence of an optional parameter in power saving preferences indicates no preference or no change by UE. (6 vs 7)

Proposal 8. FFS if UE can indicate its preferred numbers of carriers in each FR or not. (5 vs 8)

Proposal 11. FFS if release request and preferred state are indicated by a single IE, or they can be independently indicated in two separate IEs. (8 vs 5)

**This will not be treated**

[R2-2000255](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000255.zip) Reporting UE Assistance Info to NR SN CATT discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2000350](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000350.zip) Open issues for UE assistance Ericsson discussion Rel-16 NR\_newRAT-Core

[R2-2000351](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000351.zip) Open issues for MR-DC scenarios Ericsson discussion Rel-16 NR\_newRAT-Core

[R2-2000369](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000369.zip) UE assistance information for power saving vivo discussion Rel-16 FS\_NR\_UE\_pow\_sav

[R2-2000451](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000451.zip) Open issues of new UE assistance information for PWS Intel Corporation discussion Rel-16 NR\_UE\_pow\_sav

[R2-2000585](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000585.zip) UE Assistance Information for MR-DC Apple discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2000596](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000596.zip) UE Assistance Information for Scell Apple discussion Rel-16 NR\_UE\_pow\_sav-Core [R2-1915926](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915926.zip)

[R2-2000649](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000649.zip) Remaining open issues on UE assistance information OPPO discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2000826](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000826.zip) Power Saving UE assistance information Sony discussion Rel-16 NR\_UE\_pow\_sav-Core [R2-1915232](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915232.zip) Withdrawn

[R2-2000869](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000869.zip) Power Saving UE assistance information Sony Europe B.V. discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2001301](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001301.zip) Remaining issue on UE assistance LG Electronics Inc. discussion NR\_UE\_pow\_sav-Core

[R2-2001330](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001330.zip) Remaining issues on UE assistance information Huawei, HiSilicon discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2001483](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001483.zip) Remaining issues on UE Assistancec Information Qualcomm Inc discussion Rel-16

[R2-2002025](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002025.zip) Summary of open issues on UE assistance Qualcomm discussion Rel-16 NR\_UE\_pow\_sav-Core

### 6.11.6 RRM measurement relaxation

Contributions should focus on additional enhancements to LTE relaxed monitoring criteria that are specific to NR and whether neighbour cell RSRP should also be considered in cell-edge criterial.

Discuss type of RRM measurement relaxation by allowing measurements with longer intervals, and/or by reducing the number of cells/carriers to be measured. NOTE: this topic should be considered together with RAN4.

ONLY NEW CRITICAL OPEN Issues that are not identified in email discussions. Contributions should not discuss open issues in the email discussion

**To be discussed over email officially kicked off during e-meeting week (as offline email discussion) and treated the second slot, Week of March 2nd:**

[R2-2001915](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2001915.zip) Summary of RRM measurement relaxation open issues Huawei

=> Revised in [R2-2002199](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002199.zip)

[R2-2002199](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002199.zip) Summary of RRM measurement relaxation open issues Huawei

|  |
| --- |
| **Agreements:**   1. Relaxed RRM measurement is applied in the same way irrespective of whether the priorities are provided by dedicated signalling or broadcast signalling. 2. Ask RAN4 (In the same LS to RAN4 listing the RAN2 agreements) about the behaviour of relaxation of higher priority carriers: 3. For the case where Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, does RAN4 envision to relax higher priority carriers measurements further than Thigher\_priority\_search if RAN2-defined relaxation criterion(s) is/are met? 4. For the case where Srxlev < SnonIntraSearchP or Squal < SnonIntraSearchQ, does it make sense / is there a performance benefit to only relax equal/lower priority carriers but not higher priority carriers measurements if RAN2-defined relaxation criterion(s) is/are met? 5. The UE shall perform intra-frequency and inter-frequency neighbour cell measurement during TsearchDeltaP after cell selection/re-selection. 6. No indication to the network that UE has performed measurement relaxation is introduced. 7. From RAN2 perspective, there is no consensus on a method for reducing the carriers to measure in Rel-16. We can come back to this if RAN4 agrees otherwise. 8. A method for reducing the cells to measure on a carrier is not supported in Rel-16 9. FFS on the UE behaviour if T330 is running |

Needs short discussion online:

*Proposal S3-2 (8/12): Timer T330 does not impact relaxed RRM measurement.*

- Ericsson is concerned that the UE may not be able to properly report and the MDT feature wouldn’t really work.

- Huawei clarifies that if the T330 is running it does impact the power saving.

- vivo thinks that it is up to the network configuration

**This will not be treated**

[R2-2000256](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000256.zip) Way forward on measurement relaxation with high priority frequencies CATT discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2000312](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000312.zip) Configurations for RRM Measurement Relaxation in NR MediaTek Inc. discussion

[R2-2000352](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000352.zip) Open issues RRM measurement relaxation Ericsson discussion Rel-16 NR\_newRAT-Core

[R2-2000370](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000370.zip) UE Power Consumption Reduction in RRM Measurement vivo discussion Rel-16 FS\_NR\_UE\_pow\_sav [R2-1914694](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1914694.zip)

[R2-2000595](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000595.zip) Open Issues of RRM Measurement Relaxation Apple discussion Rel-16 NR\_UE\_pow\_sav

[R2-2000827](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000827.zip) UE power saving for inter frequency measurements Sony discussion Rel-16 NR\_UE\_pow\_sav-Core [R2-1915233](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915233.zip)

[R2-2000913](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000913.zip) Discussion on power saving for inter-frequency measurements CMCC discussion NR\_UE\_pow\_sav-Core [R2-1915210](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915210.zip)

[R2-2001039](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001039.zip) On RRM measurement relaxation Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2001063](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001063.zip) On SrxlevRef adaptation in relaxed monitoring Huawei, HiSilicon discussion Rel-16 NR\_UE\_pow\_sav-Core [R2-1915529](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915529.zip)

[R2-2001064](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001064.zip) Reducing the number of neighbour cells/carriers to measure Huawei, HiSilicon discussion Rel-16 NR\_UE\_pow\_sav-Core [R2-1915530](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915530.zip)

[R2-2001401](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001401.zip) Coexistence issues of measurement relaxation and early measurements LG Electronics, Ericsson, MediaTek discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2001402](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001402.zip) Per-frequency measurement relaxation based on neighbour cell quality LG Electronics discussion Rel-16 NR\_UE\_pow\_sav-Core

[R2-2001577](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001577.zip) RRM measurement relaxation Samsung discussion NR\_UE\_pow\_sav-Core

[R2-2001643](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001643.zip) On the frequency selection for RRM relaxation Samsung R&D Institute UK discussion

## 6.13 2-step RACH for NR

(NR\_2step\_RACH-Core; leading WG: RAN1; REL-16; started: Dec 18; target; Mar 20; WID: [RP-192330](file:///C:\Data\3GPP\Extracts\RP-190711%20Revised%20work%20item%20proposal%202%20step%20RACH%20for%20NR.docx)). Documents in this agenda item will be handled in a break out session

Time budget: 1 TU

Tdoc Limitation: 6 tdocs

### 6.13.1 General

Running CRs, Incoming LSs, Contributions in this AI are restricted for WI rapporteur inputs and/or spec rapporteur inputs and do not count towards the tdoc limits.

Including outcome of the email discussion [108#40][2-step RA] Running 38.331 (Ericsson)

Including outcome of the email discussion [108#82][2-step RA] Running 38.321 (ZTE)

Including outcome of the email discussion [108#83][2-step RA] Running 38.300 (Nokia)

**The following CRs should be endorsed as baseline from the email discussion and used to capture the additional agreements from the e-meeting**

[R2-2000942](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000942.zip) Stage-2 running CR for 2-step RACH Nokia (rapporteur), Nokia Shanghai Bell CR Rel-16 38.300 16.0.0 0197 - B NR\_2step\_RACH-Core

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e, and moved for email discussion

[R2-2000997](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2000997.zip) Running MAC CR for 2-step RACH ZTE Corporation (email discussion rapporteur) CR Rel-16 38.321 15.8.0 0692 - B NR\_2step\_RACH-Core, NR\_unlic-Core, TEI16

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e, and moved for email discussion

=> The CR is revised in [R2-2002202](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2002202.zip)

[R2-2002202](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2002202.zip) Running MAC CR for 2-step RACH ZTE Corporation (email discussion rapporteur) CR Rel-16 38.321 15.8.0 0692 1 B NR\_2step\_RACH-Core, NR\_unlic-Core, TEI16

=> The CR is agreed to be used as a baseline and will be revised to include all new agreements from week2

=> The revised CR will go for final approval in phase 2 of email discussion [AT109e][522]

[R2-2001217](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001217.zip) Draft CR 2-step RA 38.331 Running CR Ericsson (Email disc rapporteur) draftCR Rel-16 38.331 15.8.0 B NR\_2step\_RACH-Core

=> Not treated and revised into a real CR in [R2-2002031](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002031.zip)

[R2-2002031](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002031.zip) Running CR on 38331 for 2-step RA

=> The CR will be used as a baseline, will be revised to include all new agreements from RAN2#109e, and moved for email discussion

**Agreement**

From RAN2 point of view, the 2-step RACH WI CRs will be submitted for plenary approval. Corrections for stage3 and CFRA completion will be discussed in April. Other optimization will not be discussed.

**The following email discussions will be treated during the first slot of e-meeting**s

[R2-2000995](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000995.zip) Summary of open issues in MAC running CR - Updated ZTE Corporation (email discussion rapporteur) discussion Rel-16 Late

**To be agreed**

**Agreements**

1. Send an LS to RAN1 to check if there is any issue/concern from RAN1 perspective to support CSI-RS for 2-step RACH to support CFRA

2. Define separate configuration parameters for rsrp-ThresholdSSB and rsrp-ThresholdCSI-RS parameters for 2-step RA.

*Note: This is already done in RRC and MAC. So, no change needed (but explicit agreement is useful)*

3 Similar procedure as 4-step RACH applies if BWP switching indication is received whilst the 2-step RA procedure is ongoing (no changes needed in section 5.15, apart from adding a reference to subclause 5.1.4a)

4 Prioritisation between overlapping dynamic grant and MSGA PUSCH is left to UE implementation

5 Similar to legacy, if a configured UL grant is a retransmission in a bundle and it overlaps with MSGA PUSCH, then UE shall prioritise MSGA PUSCH

6 In some cases, we keep the same names in RRC for 2-step and 4-step variables but in MAC spec (at least for these variables), we then need to refer to specific RRC IE which configures the variable when initializing the value

Note: this means that in the MAC spec we have to remove some variables (such as: msgA-ScalingFactorBI and msgA-PreamblePowerRampingStepHighPriority, and instead initialize these with the correct values from the corresponding 2-step RACH RRC IEs)

7 When CFRA is configured; if the UE needs to select a preamble group (e.g. upon switching to CBRA), the UE selects the preamble group based only on the payload size of CFRA and the payload sizes (s) of 2-step CBRA preamble groups (i.e. pathloss criterion is not evaluated). Also applies when switching from 2-step to 4-step.

8 There is no relation between ra-MsgASizeGroupA and the payload size of MSGA PUSCH associated with preamble group A.

9 For msgA (i.e. preamble and PUSCH), during the resource selection, the UE may take into account possible occurrence of measurement gap.

**For discussion**

*Proposal 3:*

*Discussion*

- Nokia agrees that pathloss cannot be used as a criteria. Ericsson doesn’t think there would be any extra signalling for option 2.

*Proposal 4:*

Option 2: There is no relation between ra-MsgASizeGroupA and the payload size of MSGA PUSCH associated with preamble group A.

Note: if this is agreed, then it means the network can use this as an additional threshold to direct some UEs that has data above a threshold to use group B (regardless of the TB size of PUSCH payload associated with group A). Then no restriction is needed in RRC to be specified for this.

Option 3: Specify without ra-MsgASizeGroupA (i.e. we refer to the TB size of MSGA PUSCH associated with group A as in the previous version of the running CR)

*Discussion*

- Nokia explains that there is no relation and there hasn’t been any relation since Rel-8 and would like to keep the same principle. LG, Intel supports Nokia’s view and option 3 is different legacy. Vivo thinks there is a relation and TBS is configured in advanced and option 3 is

*On measurement gap*

- Vivo and Oppo would like to discuss the measurement gap. Samsung explains that msg1 and msgA (i.e. preamble and PUSCH) should be prioritized over measurement gap. Qualcomm explain that 213 has this behaviour, once you transmit preamble you always transmit PUSCH and maybe we can clarify this in the MAC.

- Nokia agrees with ZTE that the MAC CR looks good

msgA (i.e. preamble and PUSCH) may be prioritized over measurement gap, similar to legacy msg1. can select RACH occasions such that the UE can avoid the overlap with measurement gap.

- LG thinks that we need more time to check but thinks that the UE may be able to take measurement gap into account for resource selection.

[R2-2001927](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001927.zip) LS to RAN1 on Support of CFRA ZTE

Include agreements of CFRA and ask if RAN1 sees any impacts [offline 525 ]

=> update agreement 1 “Support dedicated msgA PUSCH resources …”

=> The LS is approved [R2-2001929](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001929.zip)

[R2-2001218](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001218.zip) Open issues for RRC Ericsson (Email disc rapporteur) discussion Rel-16 NR\_2step\_RACH-Core

=> Revised in [R2-2002125](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002125.zip)

[R2-2002125](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002125.zip) Open issues for RRC updated (this was updated based on our discussion last friday)

**Agreements**

**For 2-step CFRA**

1 Support dedicated msgA PUSCH resources, i.e non-shared msgA PUSCH resources between CFRA and CBRA.

2 For dedicated msgA PUSCH resources, the full msgA PUSCH configuration is signaled in RACH-ConfigDedicated

3 Dedicated msgA PRACH occasions are optionally configured for 2-step CFRA. If not configured, msgA PRACH occasions for 2-step CBRA are used.

**General**

4 Send an LS to RAN1 asking whether NR-U PRACH root sequences are applicable for 2-step RA.

5 Conditionally mandatory need codes and field descriptions for RACH-related parameters reflecting the table in the appendix.

6 Preamble grouping for different states are configured implicitly by means of BWP configurations (i.e. nothing new is introduced).

7 On discarding/releasing the 2-step CFRA resources, agree to use same behaviour as for rel-15 for releasing 4-step CFRA (i.e. all configured resources should be released)

*Proposal 1* *Preamble grouping for different states are configured implicitly by means of BWP configurations. For the limitation on connected mode-specific preamble grouping on initial uplink BWP shall be FFS.*

- CATT explains that RAN1 agreement is aligned with this proposal. From UE point of view there is always up to two groups, and network can configure different than initial BWP. Nokia agrees and we don’t need any FFS.

- Qualcomm thinks that RAN1 asked us to support mode-specific preamble grouping. Nokia doesn’t understand why RAN1 went into state specific discussion. Vivo explains that the intention from RAN1 is not to introduce the state specific configuration.

- Nokia thinks that preamble group is a RAN2 issue. Ericsson thinks that PUSCH configuration is a RAN1 issue. ZTE explains that there is no conflict with the specification if we go this way as RAN1 only defines the mapping.

- LG thinks that Qualcomm’s concern can be resolved by configuring two BWPs and they are ok with no further optimization.

*On discarding/releasing the 2-step CFRA resources, agree and select between the options:*

***Option 1:*** *Use same behaviour as for rel-15 for releasing 2-step CFRA.*

***Option 2:*** *Introduce a new message for releasing the PUSCH resources or carry a PUSCH resource release indication in msgB.*

- APT asks if this also includes release the “dedicated MSGA PUSCH resource” or only CFRA resource? it should be discussed since the dedicated PUSCH resource should not be reserved for a longer time than necessary, which is very costly.

- Ericsson thinks that the current mechanisms can be used to ensure that resources are kept for a long time. ZTE thinks that we typically release them at the same time.

[R2-2002126](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002126.zip) Draft LS to RAN1 on NR-U PRACH root sequence for 2-step RA (coming from the proposal from the open issue document)

=> update WI code NR\_unlic-Core

=> add the lengths (571, 1151)

=> Update RAN2 respectfully ask RAN1 to confirm whether the two new root sequences above are applicable to 2-step RA for NR-U

=> Update " Since RAN2 has introduced the option of configuring a BWP with only 2-step RA, if 2-step RA shall support the newly introduced NR-U PRACH root sequences as for the current 4-step RRC configuration[3], then it needs to be explicitly configurable for 2-step RA.”

=> The LS is revised in [R2-2001928](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001928.zip) with the changes above

[R2-2001928](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001928.zip) Draft LS to RAN1 on NR-U PRACH root sequence for 2-step RA

=> The LS is approved in [R2-2002138](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002138.zip)

Not treated

[R2-2000994](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000994.zip) Summary of open issues in MAC running CR ZTE Corporation (email discussion rapporteur) discussion Rel-16

[R2-2001219](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001219.zip) Phase 2 and phase 1 issue list Ericsson (Email disc rapporteur) discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000992](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000992.zip) Summary of running MAC CR review issue list - phase 1 ZTE Corporation (email discussion rapporteur) report Rel-16

[R2-2000993](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000993.zip) Summary of running MAC CR review issue list - phase 2 ZTE Corporation (email discussion rapporteur) report Rel-16

[R2-2000996](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000996.zip) Draft-Running MAC CR for 2-step RACH ZTE Corporation (email discussion rapporteur) draftCR Rel-16 38.321 15.8.0 B NR\_2step\_RACH-Core, NR\_unlic-Core, TEI16

[R2-2000995](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000995.zip) Summary of open issues in MAC running CR - Updated ZTE Corporation (email discussion rapporteur) discussion Rel-16 Late

### 6.13.2 Other user plane stage-3 aspects

RA-RNTI design and open aspects of contention resolution.

**To be discussed over email officially kicked off during e-meeting week (as offline email discussion) and treated the second slot, Week of March 2nd:**

[R2-2001916](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2001916.zip) Summary of UP open issues ZTE

**Agreements**

1. MDT/SON work can discuss the UE reporting of 2-step RA failure - e.g. as part of the objectives in the MDT/SON WID - RP-193255 (i.e. no further work is pursued for this under 2-step RACH WID) – no changes to current running CR.
2. For the issue regarding the start of the msgB window for invalid PUSCH resource, we send an LS to RAN1 asking them: "if the starting point of the msgB window is clear from RAN1 specs for the case when the PUSCH resource is invalid and fix it in RAN1 specs if this is unclear and if needed". Updates to MAC spec can be discussed during the Running CR phase.
3. In case of 2-step CFRA, if MSGA payload is lost, then the network will send fallbackRAR. For new transmission (i.e. MSGA payload is successfully received), C-RNTI based scheduling can be used (i.e. no changes to the current running CR)

[R2-2002200](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002200.zip) LS to RAN1 on the starting point of msgB window ZTE

=> the LS is revised in [R2-2002205](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002205.zip)

[R2-2002205](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002205.zip) LS to RAN1 on the starting point of msgB window ZTE

- Samsung thinks that we still have a problem in the MAC to fix. ZTE confirms that if this is need we may need to update.

- Nokia is not sure why we have to send this LS as RAN1 should fix it themselves.

=> Update the action to RAN1 from “unclear” to “needed”

- Qualcomm thinks we should ask what the starting point it.

=> The LS is approved in R2-2002298

**This will not be treated**

[R2-2000141](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000141.zip) Simultaneous BWP Switching and Contention Resolution in 2-step RACH vivo discussion

[R2-2000142](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000142.zip) Resource Selection for 2-step RACH Considering Measurment Gap vivo discussion [R2-1914377](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1914377.zip)

[R2-2000143](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000143.zip) Handling of the Collision Between MsgA Grant and Another UL Grant vivo discussion

[R2-2000144](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000144.zip) Discuession on the MsgB Response Window for 2-step CFRA vivo discussion

[R2-2000220](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000220.zip) Handling PDCCH Order Initiated CFRA Samsung Electronics Co., Ltd discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000221](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000221.zip) NDI Toggling Aspects Samsung Electronics Co., Ltd discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000222](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000222.zip) Preamble Group Selection upon switching from 2 step CFRA to 2 step CBRA Samsung Electronics Co., Ltd discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000223](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000223.zip) Preamble Group Selection upon switching from 2 step to 4 step RA Samsung Electronics Co., Ltd discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000225](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000225.zip) Handling Preambles not associated with PRUs Samsung Electronics Co., Ltd discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000388](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000388.zip) Preamble group selection and 2-step failure reporting Ericsson discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000389](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000389.zip) Combined Back-off and 4-step switch Ericsson discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000391](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000391.zip) Use of 2-step resources on different BWPs Ericsson discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000408](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000408.zip) Issues on preamble group selection for 2-step RACH OPPO discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000409](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000409.zip) Measurement gap impacts on MSGA transmission OPPO discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000777](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000777.zip) Discussion on preamble group selection for 2step RACH initiated by HO Fujitsu discussion Rel-16 NR\_2step\_RACH

[R2-2000812](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000812.zip) Views on Remaining MAC Issues for 2-Step RACH CATT discussion NR\_2step\_RACH-Core

[R2-2000831](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000831.zip) Differentiating between MsgB carrying RRC and other messages Sony discussion Rel-16 NR\_2step\_RACH-Core [R2-1915240](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-1915240.zip)

[R2-2000833](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000833.zip) msgB-RNTI ambiguity for CFRA and CBRA of 2-Step RACH Sony discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000852](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000852.zip) 2-step CBRA preamble group selection Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000853](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000853.zip) Need for ra-MsgASizeGroupA parameter Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000951](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000951.zip) Remaining issues on the msgA transmission Huawei, HiSilicon discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000952](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000952.zip) Remaining issues on MsgB reception Huawei, HiSilicon discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000953](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000953.zip) Draft LS to RAN1 on LSBs of SFN Huawei, HiSilicon discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000954](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000954.zip) Open issues on MAC spec for 2-stepRACH Huawei, HiSilicon discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000955](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000955.zip) MAC handling of MsgA with invalid PUSCH Huawei, HiSilicon discussion Rel-16 NR\_2step\_RACH-Core

[R2-2001017](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001017.zip) Remaining issues on 2-step CBRA Qualcomm Incorporated discussion Rel-16 NR\_2step\_RACH-Core

[R2-2001125](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001125.zip) Preamble grouping for 2-step RA NEC Telecom MODUS Ltd. discussion

[R2-2001510](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001510.zip) Further discussion on preamble group selection LG Electronics discussion NR\_2step\_RACH-Core

[R2-2001512](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001512.zip) Draft 38.321 CR on preamble group selection for 2-step RA type LG Electronics draftCR Rel-16 38.321 15.8.0 C NR\_2step\_RACH-Core

[R2-2001529](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001529.zip) Remaining issue on user plane aspects LG Electronics discussion NR\_2step\_RACH-Core

### 6.13.3 RRC stage-3 related aspects

**To be discussed over email officially kicked off during e-meeting week (as offline email discussion) and treated the second slot, Week of March 2nd:**

[R2-2001917](C:\\Users\\panidx\\Documents\\RAN2\\TSGR2_109_e\\Docs\\R2-2001917.zip) Summary of CP open issues Ericsson

[Offline discussion 508]

**Agreements**

1. Fallback RAR shall be supported for BWP(s) where 2-step RA resources are configured (no changes to the current running CR).
2. Include ra-ContentionResolutionTimer in RACH-ConfigCommonTwoStepRA-r16 for fallback RAR, which is only configurable for 2-step RA only BWP.
3. Msg3-DeltaPreamble can be present in PUSCH-ConfigCommon for fallback RAR when a 2-step only BWP is configured.
4. RAN2 send an LS to RAN1 on the identified options for preamble-to-PRU mapping for 2-step CFRA. Explain the options that has been discussed and indicate that option 1 has majority in RAN2 and ask RAN1 whether there is any feasibility concerns and inform us on which option will be implemented.

*UE capability*

- Nokia doesn’t know what we will discuss, we only have one UE capability 2-step RACH

- Intel thinks we can make an agreement to have a singe UE cability

- Qualcomm doesn’t think this is acceptable and we should wait for RAN1. ZTE explains that even for 4-step we don’t have a separate CFRA and CBRA capability, only for CSI-RS and CFRA

- Huawei also doesn’t think we can make the conclusion here but we should wait for RAN1.

- LG thinks that separate CFRA and CBRA are needed

=> Resume this discussion in April

[R2-2002204](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2002204.zip) LS to RAN1 on the identified options for preamble-to-PRU mapping for 2-step CFRA Ericsson

[offline 525]

**This will not be treated**

[R2-2000224](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000224.zip) PUSCH Resource Configuration for CFRA Samsung Electronics Co., Ltd discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000410](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000410.zip) Remaining issues on configuration of 2-step CFRA OPPO discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000586](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000586.zip) Open Issues on 2-step RACH Apple discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000650](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000650.zip) Views on Remaining RRC Issues for 2-Step RACH CATT discussion NR\_2step\_RACH-Core

[R2-2000778](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000778.zip) Discussion on RO and PO configuration for CFRA Fujitsu discussion Rel-16 NR\_2step\_RACH

[R2-2000998](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000998.zip) Resource configuration for 2-step CFRA ZTE Corporation, Sanechips discussion Rel-16

### 6.13.4 Other

CFRA for 2-step RACH for HO if time permits as per plenary guidance.

ZTE will summarize the proposals and open issues and provide possible way forward for online discussions. Companies are encouraged to work together towards a converged solution.

**This will not be treated**

[R2-2000390](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000390.zip) BSR over 2-step RA Ericsson discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000392](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000392.zip) Beam specific 2-step RA support Ericsson discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000393](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000393.zip) MsgA transmission for NR-U Ericsson discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000916](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000916.zip) Discussion on the release of the PUSCH resources CMCC discussion Rel-16

[R2-2000917](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000917.zip) Remaining issues on 2-step CFRA CMCC discussion Rel-16

[R2-2000926](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000926.zip) Open issues for 2-step CFRA CMCC discussion Rel-16 Revised

[R2-2000943](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000943.zip) MSGB for CFRA Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_2step\_RACH-Core

[R2-2000956](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000956.zip) Prioritized 2-step RACH Huawei, HiSilicon discussion Rel-16 NR\_2step\_RACH-Core

[R2-2001032](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001032.zip) Remaining issues on 2-step CFRA Qualcomm Incorporated discussion Rel-16 NR\_2step\_RACH-Core

[R2-2001095](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001095.zip) RAN2 aspect of UE capability for 2-step RACH Intel Corporation discussion Rel-16 NR\_2step\_RACH-Core

[R2-2001102](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001102.zip) Discussion on MsgB PDCCH Potevio Company Limited discussion Rel-16 NR\_2step\_RACH-Core

[R2-2001471](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001471.zip) Further discussion on 2-Step CFRA CMCC discussion Rel-16 [R2-2000926](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2000926.zip)

[R2-2001514](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001514.zip) Releasing CFRA resources for 2-step RA type LG Electronics discussion NR\_2step\_RACH-Core

[R2-2001515](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001515.zip) Draft 38.321 CR on release of CFRA resource for 2-step RA type LG Electronics draftCR Rel-16 38.321 15.8.0 B NR\_2step\_RACH-Core

[R2-2001518](file:///C:\Users\panidx\Documents\RAN2\TSGR2_109_e\Docs\R2-2001518.zip) Draft 38.331 CR on release of CFRA resource for 2-step RA type LG Electronics draftCR Rel-16 38.331 15.8.0 NR\_2step\_RACH-Core