3GPP TSG-RAN WG1 Meeting #106bis-e Tdoc R1- 21XXXXX

E-meeting, October 11th – 19th, 2021

Agenda Item: 8

Source: Moderator (Ericsson)

Title: Summary of Email discussion on Rel-17 RRC parameters for LS to RAN2

Document for: Discussion, Decision

# 1 Introduction

This document summarizes the discussions in input contributions and during RAN1#106bis-e under the following email thread assigned by RAN1 Chair:

[106bis-e-R17-RRC] Email discussion on Rel-17 RRC parameters for LS to RAN2 – Sorour (Ericsson)

* Email discussion to start on October 18
* LS to RAN2 to be finalized and endorsed on October 22

There have been ongoing email discussions since Post RAN1#106-e meeting across Rel-17 WIs in order to provide the preliminary RRC parameter list for supported PHY functionalities by RAN1. The discussions on RRC parameters in respecitve Rel-17 WIs are resumed in RAN1#106bis-e with a final check point on October 19th. Moreover, aiming for a consistent and efficient approach for preparing RRC parameters in RAN1, [1] was prepared that suggests a set of recommendations and guidelines to achieve this goal.

Within this email discussion, i.e. [106bis-e-R17-RRC], the RRC parameter lists across different WIs are merged into an Excelsheet for final review by the group and approval by Chair to be sent via an LS to RAN2/RAN3 by October 22nd.

**Moreover, as described in [1], it is benficail to consider only stable (not necessarily complete) RRC parameters in the LS to RAN2. The remaining RRC parameters can be discussed further in RAN1 at the next meetings and be included in the earleist LS to RAN2, when identified as stable**.

Please note that due to the ongoing RRC parameter email discussions per WI, the coordination between RRC email discussions per WI and this email discussion is considered as the following:

* The Moderator of each WI RRC email discussion [106bis-e-R17-RRC-WI], has provided the “WI input RRC list”. These lists are collected in an Excelsheet by the Moderator of [106bis-e-R17-RRC].
* The collective Excelsheet is reviewed under [106bis-e-R17-RRC] email discussion using section 2.1 below.
* If the collective Excelsheet is subject to update based on any input from a WI RRC email discussion Moderator, for example due to the agreements made at the late stage of the meeting, the update of the Excelsheet would be announced in this email discussion.
	+ Each WI input RRC list includes a column at the end for “Status” to identify most impotantly the “stable” rows in the list. Please note that this column is for RAN1 information only and will not be included in the LS to RAN2.

Comapnies are encouraged to consider the discussion in the following section and provide their input, if any.

# 2 Discussion

## 2.1 RRC parameter lists of Rel-17 Ws

The sub-sections below are organized for collection of comments on RRC parameters per WI. Please provide you comments, if any, for the input RRC list of a WI in the corresponding sub-section using the **latest version of Excelsheet** available at folder [Collection of RRC parameters](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_106b-e/Inbox/drafts/8/%5B106bis-e-R17-RRC%5D/Collection%20of%20RRC%20parameters).

### 2.1.1 feNR-MIMO [106bis-e-R17-RRC-MIMO]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.** **Please note that status Column is not available for this list. The assumption is that the entries are “stable”. If an issue raised in this email discussion for an entry that can not be resolved, changes the status of that entry to “unstable”.** |
| **Company** | **Comment** |
| Ericsson | Row 5: There is an important piece of information missing in the excel sheet for SourceRS-Info\_r17. According to RAN1 agreements, the possibly RS types included in SourceRS-Info\_r17 is different for UL and DL TCI states. This makes it impossible for RAN2 to design the signaling.Propose to add the following to the description of SourceRS-Info\_r17:The applicable source RS type is different for UL and joint/DL TCI states: SRS is applicable for UL TCI states, but not for joint/DL TCI states. |
| Moderator | **@All:** For Sheet feNR-MIMO in the next **version of Excelsheet (i.e. v006)** at folder [Collection of RRC parameters](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_106b-e/Inbox/drafts/8/%5B106bis-e-R17-RRC%5D/Collection%20of%20RRC%20parameters)* The proposed suggestion by Ericsson, Row 5 will be adopted
* Based on received feedback from FL, Row 73 would be marked as “unstable”. The remaining rows are considered stable.
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| Apple | Row 15:We think whether TCI-StateIndicationType is needed should depend on the design of TCI state pools. This RRC parmeter may not be needed as it is not reasonable for gNB to configure both joint and separate TCI by RRC, and use an explicit RRC to tell UE which TCI should be used. In our view, to be aligned with the agreement, gNB should configure only 1 type of TCI state, i.e. joint or separate, by RRC. We suggest we add a bracket for this parameter and add a note that detailed design is up to RAN2.Row 31:We think SourceRS-Info\_r17-PLRS should be removed. We failed to see the relevant agreement.Row 63 and 64: We think both parameters should be removed. We failed to see the relevant agreement. |
| Huawei, HiSilicon | **Row 15:**Somehow we disagree with the comment from Apple. Reading the conclusion below, we think it has been concluded in RAN1 that a UE can be configured with both joint TCI and separate DL/UL TCI, and the switch between joint TCI and separate DL/UL TCI is based on RRC signalling. RAN1#105**Conclusion**On Rel-17 unified TCI framework, for a UE configured with both joint TCI and separate DL/UL TCI, configuration of joint TCI or separate DL/UL TCI is based on RRC signaling * There is no consensus in RAN1 on how to support dynamic switching (either MAC-CE or codepoint based)

**Row 27/28:**Based on latest agreement pasted below, the description and candidate values of Row #27/28 should be updated. In particular, the candidate value for Row #27 should not include AP-SRS for BM. In addition, in description of Row #28, what is to be shared is not the TCI state for PDSCH/CORESET, instead it should be that for PUSCH/PUCCH. And AP-SRS for BM should be added to either the description or candidate value for Row #28 (for SRS for BM, it is aperiodic-only, but SRS for antenna switching/codebook-based/non-codebook-based UL transmissions, there is no such restriction). RAN1#106b**Agreement**On Rel.17 unified TCI framework, for Rel-17 unified TCI, for DL or UL channels/signals that can share the same indicated Rel-17 TCI state as UE-dedicated reception on PDSCH/PDCCH or dynamic-grant/configured-grant based PUSCH, all of dedicated PUCCH resources (via Rel-17 MAC-CE/DCI TCI state update):* For DL: A non-UE dedicated PDCCH/PDSCH associated with the serving cell PCI or AP CSI-RS for BM or CSI (per previous agreements) sharing the same indicated Rel-17 TCI state as UE-dedicated reception on PDSCH/PDCCH (via Rel-17 MAC-CE/DCI TCI state update) is configured via RRC.
* For UL: An SRS for BM, for antenna switching, or for codebook/non-codebook based uplink transmission (per previous agreements) sharing the same indicated Rel-17 TCI state as dynamic-grant/configured-grant based PUSCH, all of dedicated PUCCH resources (via Rel-17 MAC-CE/DCI TCI state update) is configured via RRC.

Note: The details of this RRC configuration (e.g. whether via a new RRC parameter or other means) is up to RAN2. This does not imply that a new RRC parameter(s) is necessary from RAN1 point of view.FFS: Relevant UE capability to be discussed under UE feature agenda item.RAN1#106AgreementOn Rel.17 unified TCI framework:* Aperiodic SRS resources or resource sets for BM can share the same indicated Rel-17 TCI state as dynamic-grant/configured-grant based PUSCH, all or subset of dedicated PUCCH resources in a CC
	+ FFS: Discuss if/which restriction is necessary, e.g. only for aperiodic, apply to all resources in a set
	+ Note: This doesn’t imply that all time-domain behaviours are automatically supported
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| vivo | Row2/4:We don’t think it is appropriate to state in Collume J that “In addition, it includes TCI state type (note: column P excat structure is up to RAN2)” is correct understanding. This part is upto RAN2 discussion and may not necessarily need an explicit RRC parameter. Thus the RRC parameter tci-StateType in Row4 is not needed. The note “~~In addition, it includes TCI state type (note: column P excat structure is up to RAN2)~~” in Row2 should be deleted and Row4 should be put in brackets or deleted.Row10/11/12/13:Prefer to put all the RRC parameters in brackets. The measurement and reporting configuration framework still needs further discussion in RAN1. Row27:The following update for note is necessary based on latest agreementa list of the non UE-dedicated PDCCH/PDSCH, resource and/or resource set ID of the RS(s) which share the same indicated Rel-17 TCI state as UE-dedicated reception on PDSCH and for UE-dedicated reception on all or subset of CORESETs in a CCRow 60/61:The following description in column P should be deleted. Based on latest agreement whether the configuration is mandatory or not is still open for further discussion.~~This parameter should be mandatorily configured with at least 1 resource when M-TRP BFR is configured for the same DL BWP.~~ **Agreement:**To associate BFD-RS set k and NBI-RS set j·       Alt-1: 1-to-1, fixed in spec·       Whether NBI-RS configuration is mandatory is separate discussionRow 88/89:Column E “RAN2 Parant IE” can be filled with “NZP-CSI-RS-Resource-Set”.Row 90:Column E “RAN2 Parant IE” can be filled with “CSI-ReportConfig”.Column M “Per (UE, cell, TRP, …)” should be “Per DL BWP, ~~per NZP-CSI-RS-ResourceSet~~ per **CSI-ReportConfig**”RAN1#106bis-e**Conclusion*** **“*N CMR pairs*” and “*Two CMR groups*” are configured in NZP-CSI-RS-Resource-Set**
* **“*sharedCMR*” is configured in CSI-ReportConfig**
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| ZTE | In general, we do not identify the necessity of *tci-StateType (Row-4)*, and its corresponding functionality can be implicitly achieved based on the TCI state configuration.Regarding *InterCellAdditionalPCI (Row-13)*, and *QCL-Info\_NeighbourCell (Row-14)*, we prefer to remove them and use the above Rel-17 TCI state to achieve this function directly. * First we have some concerns about directly adding PCI into this Rel-17 TCI state IE which is against the already agreement in inter-cell mTRP. Therefore, InterCellAdditionalPCI should be modified as interCellAdditionalNeighboringCell that contains PCI, SSB time domain location, SSB periodicity and SSB transmission power.
* Then, the discussion on whether/how to introduce QCL-Info\_NeighbourCell should be postponed and may be up to RAN2 signalling design. In technical, we should strive to have a unified solution for inter-cell beam management and inter-cell mTRP in Rel-17.

Regarding *InterCellBeamMetrics(Row-10)*, *InterCellMeasurementRS(Row-11)*, and *InterCellReportType(Row-12)*, the necessity of those three parameters should be justified. Alternatively, it can be achieved by the legacy CSI framework well, besides that we have a new SSB-Index\_r17 containing (interCellAdditionalNeighboringCell, SSB-index) in CSI-SSB-ResourceSet.Regarding *MPE-Config-FR2-r17 (Row-22)*, *mpe-ProhibitTimer-r17 (Row-23)* and *mpe-Threshold-r17 (Row-24)*, we suggest to reuse the already PHR related parameters, and these three parameters can be removed.Regarding *Inter-cell mTRP*, we suggest to add one parameter of the new indicator/signalling to be in line with the following agreement in RAN1#106-e.**Agreement**Introduce a new RRC indicator/signalling (e.g., re-index the non-serving cell) to indicate the non-serving cell information that a TCI state/QCL information is associated with, where the new indicator/signaling is not the exact PCI valueDetailed signalling design is up to RAN2Regarding *[groupBasedBeamReportingR17] (Row-54)*, based on this meeting discussion, it seems that all companies are fine with the RRC parameters. So we suggest to remove the bracket and keep the current text as proposed by FL. Regarding *failureDetectionResourcesToAddModList[1] (Row-63)*, or *failureDetectionResourcesToAddModList2 (Row-64)*, RRC or MAC-CE based BFD configuration is still on-going discussion, and so we suggest to remove them and wait for the final RAN1 decision. |
| Ericsson2 | We have some additional comments with regards to rows for mTRP BM:**Row 54 regarding parameter [groupBasedBeamReportingR17]:** From the comments in Column P of this row, the excel sheet says further discussion is needed on whether this parameter needs to be introduced in Rel-17. If it is decided to keep this parameter as suggested by ZTE, we should clean up Column P and remove statements such as ‘further discussion is needed on whether this parameter needs to be introduced in Rel-17. Otherwise, we will cause confusion to RAN2. To be on the safe side, we would like to flag this as an unstable row. Once RAN1 has decided on the need for this parameter, we can include this in the excel sheet.**Row 57 regarding parameter [rsrp-ThresholdSSBBFR1]:** From the comments in Column P of this row, there is an FFS that says further discussion is needed on whether this parameter needs to be introduced in Rel-17 or if Rel-16 parameter can be reused. We would like to flag this as an unstable row. Once RAN1 has decided on the need for this parameter, we can include this in the excel sheet. Also, in Column J, we have the descritipon of TRP1 and TRP2. Note that at least in RAN1, the term TRP is not intended to be captured in the specifications. So, the description in column J needs some further revisions. Suggest to use the revised wording as follows for column J: “new beam identification threshold for new beam identification set 1 and new beam identification set 2”.**Row 63 regarding parameter [failureDetectionResourcesToAddModList[1]]:** In columns J and P, we use the term TRP1 in the excel sheet. Note that at least in RAN1, the term TRP is not intended to be captured in the specifications. So, the description in columns J and P needs some further revisions. Suggest to revise colum J as follows: ‘A first list of reference signals for detecting beam failure’. Suggest to revise the first sentence of column P as ‘Explicilty configured first BFD-RS set’.**Row 64 regarding parameter [failureDetectionResourcesToAddModList2]:** In columns J and P, we use the term TRP2 in the excel sheet. Note that at least in RAN1, the term TRP is not intended to be captured in the specifications. So, the description in columns J and P needs some further revisions. Suggest to revise colum J as follows: ‘A second list of reference signals for detecting beam failure’. Suggest to revise the first sentence of column P as ‘Explicilty configured second BFD-RS set’. |
| Huawei, HiSilicon | **Row 4:** We don’t quite understand the comments from vivo and ZTE. It seems natural to have row 4 given the agreement below (marked in blue). AgreementOn Rel-17 unified TCI framework, to accommodate the case of separate beam indication for UL and DL:* Utilize two separate TCI states, one for DL and one for UL.
	+ FFS: Contents of separate UL TCI state
	+ Note: For FR1, UE does not expect UL TCI to provide a reference for determining common UL TX spatial filter(s), if UL TCI is supported for FR1
* For the separate DL TCI:
	+ The source reference signal(s) in M TCIs provide QCL information at least for UE-dedicated reception on PDSCH and for UE-dedicated reception on all or subset of CORESETs in a CC
* For the separate UL TCI:
	+ The source reference signal(s) in N TCIs provide a reference for determining common UL TX spatial filter(s) at least for dynamic-grant/configured-grant based PUSCH, all or subset of dedicated PUCCH resources in a CC
	+ Optionally, this UL TX spatial filter can also apply to all SRS resources in resource set(s) configured for antenna switching/codebook-based/non-codebook-based UL transmissions
* FFS: Whether the UL TCI state is taken from a common/same or separate TCI state pool from DL TCI state
	+ Note that TCI state pool for joint DL and UL beam indication is still FFS
* FFS: Whether Rel.17 supports TCI configured for single channel (e.g. PDSCH only, single CORESET)
* Note: This does not preclude the type of UE supporting only 1 beam tracking loop, i.e. UE reports value of 1 in UE FG 2-62.

**Row 54:** As captured in column P, we don’t see the need for this parameter, so we prefer not to remove brackets (sugggested by ZTE).**Row 55:** As Row 54 is now in brackets, the red part in the descrption should be put in brackets as well – i.e., “Number of reported beam group per CSI-report [when groupBasedBeamReportingR17 is enabled]“. |
| LG | **Row 4:** Agree with Huawei that this row is needed at least for differentiate DL TCI and UL TCI for separate TCI since they have differences in supported source RS types (SRS can be included in UL TCI but not in DL TCI), inclusion of PL RS, etc. **Row 27/28:** Similar comment as Huawei that the description and candidate values of Row #27/28 should be updated. Specifically, the description of #28 needs to be aligned with #27, i.e. “a list of the resource and/or resource set ID of the RS(s) which share the same indicated Rel-17 TCI state...“ instead of “whether all SRS resources in resource set(s)....“ to align RRC strucure/format for DL and UL. In addition, the value range of #28 should be TBD instead of {0,1}.  |

### 2.1.2 60GHz [106bis-e-R17-RRC-60GHz]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
| vivo | Comment 1:Row 16, need to add new IE and the value range of *DL-DataToUL-ACK-r17* inside *PUCCH-Config* is (-1 .. 127) applicable to 480 and 960 kHzComment 2:Row 17, need to add new IE and the value range of *DL-DataToUL-ACK-DCI-1-2-r17* inside *PUCCH-Config* is (0 .. 127) applicable to 480 and 960 kHzAgreement:For NR operation with 480 kHz and/or 960 kHz SCS, the value range of k1 indicated in RRC is -1 ~ 127 for DCI format 1\_1 and 0 ~ 127 for DCI format 1\_2.* Note: this does not imply that DCI format 1\_2 supports multi-PDSCH scheduling

Comment 3:Row 26, need to add to Column J “when the field k2 is absent, the UE applies the value 11 when PUSCH SCS is 480 kHz; and the value 21 when PUSCH SCS is 960 kHz for k2.” and add to column P with the following agreementAgreement:* When the field k2 is absent in RRC, the UE applies the value 11 when PUSCH SCS is 480 kHz; and the value 21 when PUSCH SCS is 960 kHz for k2.
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| Moderator | **@vivo:** Thanks for careful review and comments.Rapporture recoomendation is to wait with Comment#1 and Comment#2. The reason is that they may need RAN2 to decide how to add them, given it may or may not be easy to extend the range in legacy IEs. For comment 3, it is additional default values in field descriptions. I hope you are fine with this recommendation.**@All:** For Sheet 60 GHz in the next **version of Excelsheet (i.e. v006)** at folder [Collection of RRC parameters](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_106b-e/Inbox/drafts/8/%5B106bis-e-R17-RRC%5D/Collection%20of%20RRC%20parameters)* The proposed suggestion by vivo for Row 5 will be adopted
 |
| Apple | Comment#1:* Row 4/Column #P:
	+ ‘480KHz - 139, w/ FFS 571’. The FFS should be removed for ‘571’ based on the latest agreement:
* Row7/Column J:
	+ ‘Field description requires updating to capture that L = 1151 is not supported for SCS 480 and 960 kHz and L = 571 is not supported for 960 [and 480] kHz.’. The ‘[and 480]’ should be removed.

**Agreement*** Additionally support PRACH length L=571 for 480kHz
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| Ericsson | My comments are based on v006 of the Excel sheetComment #1Rows 12,13, and 14 Column J: Recommend updating the description as follows to emphasize that the the number of RBs is configured per PUCCH resource (same as for PF2/3 in Rel-15, and clarified in the RAN1#106-e agreement).Number of PRB for the PF0 resourceNumber of PRB for the PF1 resourceNumber of PRB for the PF4 resourceComment#2Row 25 Column J: It should be k2, not k0 since this row is for PUSCH, not PDSCH. Same change needed for the RAN1 agreement in Column P.Row 26 Column J: It should be k0, not k2 since this row is for PDSCH, not PUSCH. Same change needed for the RAN1 agreement in Column P. Row 26 Column P: The following agreement should be moved to Row 25 since Row 26 is for PDSCH, not PUSCH:When the field k2 is absent, the UE applies the value 11 when PUSCH SCS is 480 kHz; and the value 21 when PUSCH SCS is 960 kHz for k2Comment #3Row 27: I think the value range should be {enable}, since when the parameter is configured, the feature is enabled.Additionally, the field description in Column J is inaccurate. To be consistent with the RAN1 agreement listed in Column P, the description in Column J should read as follows:Applicable to 480 and 960 kHz when rank 1 PDSCH with type-1 or type-2 DMRS is scheduled..When configured, the UE ~~will assume the FD OCC for DMRS is disabled when rank 1 PDSCH is scheduled~~ may assume that a set of remaining orthogonal antenna ports are not associated with the PDSCH of another UE, wherein the set of remaining orthogonal antenna ports are within the same CDM group and have different FD-OCC.Comment #4:Row 7, Column J: The following change can be made since L = 571 was agreed for 480 kHz SCS:May not need to change the IE, but need to add in the note on the limitation to be used with SCS. Field description requires updating to capture that L = 1151 is not supported for SCS 480 and 960 kHz and L = 571 is not supported for 960 ~~[and 480]~~ kHz. Agreement:Additionally, support PRACH length L=571 for 480kHz |
| LG Electronics | On row #25:* Parameter name “PDSCH-TimeDomainResourceAllocationListForMultiPUSCH-r17” should be changed to PUSCH-TimeDomainResourceAllocationListForMultiPUSCH-r17.

On row #26:* Parameter name “PUSCH-TimeDomainResourceAllocationListForMultiPDSCH-r17” should be changed to PDSCH-TimeDomainResourceAllocationListForMultiPDSCH-r17.
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| Ericsson2 | Regarding vivo's Comments 1 and 2, the moderator is correct that the RAN1 agreement extends the value range, and RAN2 should decide how to do that. However, we agree with vivo that the RAN1 agreement should be captured in the spreadsheet somehow so RAN2 will do the value range extension. So, our suggestion would be to add two new rows to the spreadsheet for these two parameters, and flag them as “Existing” rather than “New.” Then a note can be added to Column P to say that RAN2 can decide whether a new parameter or extension of an existing parameter can be done.In summary our recommendation would be to add two new rows to the spreadsheet as follows:1st new rowColumn G: dl-DataToUL-ACK-r17Column H: ExistingColumn J: Similar field description as for Rel-16. Applicable to 480/960 kHz SCS.Column K: -1 .. 127Column M: PUCCH-ConfigColumn P: Include RAN1 agreement plus the following note* Note: It is up to RAN2 whether to introduce a new parameter or extend the value range of an existing parameter.

2nd new row:Column G: dl-DataToUL-ACK-DCI-1-2-r17Column H: ExistingColumn J: Similar field description as for Rel-16. Applicable to 480/960 kHz SCS.Column K: 0 .. 127Column M: PUCCH-ConfigColumn P: Include RAN1 agreement plus the following note* Note: It is up to RAN2 whether to introduce a new parameter or extend the value range of an existing parameter.
 |
| ZTE | 1. For row7, need to remove “ [and 480]” from column J, and add related agreement in column P. the agreement was achieved in the RAN1#106bis e-meeting, as follows:

Agreement:Additionally, support PRACH length L=571 for 480kHz1. Fix some Typo for column K, row 7 and 8, as follows:

CHOICE { l571 INTEGER {0..569}, l1151 INTEER {0..1149}}→CHOICE { l571 INTEGER {0..569}, l1151 INTEGER {0..1149}}CHOICE { l839 INTEGER {0..837}, l139 INTEER {0..137}}→CHOICE { l839 INTEGER {0..837}, l139 INTEGER {0..137}}1. For row 12, 13, 14, need to remove “ (to be updated pending updated agreement)” in column M, and update the following agreement of RAN1#106bis e-meeting in column P.

Agreement:* Update the following RAN1#106-e agreement to clarify that the number of RBs can be configured separately per PUCCH resource

Update of RAN1#106-e Agreement:* Support an RRC parameter to configure the number of RBs ~~for a~~ per PUCCH resource for each of enhanced PUCCH formats 0, 1, and 4
* The parameter is provided by dedicated signaling (per UE) per BWP
* Update the description of the RRC parameter accordingly within the RRC parameter email thread
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### 2.1.3 IIoT&URLLC [106bis-e-R17-RRC-IIoT-URLLC]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
| QC | (based on version 006 of the excel file)Row 2. On SPS HARQ Deferral, there should be two RRC parameters1. One logical parameter {true, false} allowing or not allowing the feature per SPS configuration.
2. If the logical parameter above is set to true, then, the second RRC parameter should be max\_deferral\_time, or max\_def\_k1. The group still debates about the value of this 2nd parameter.

Row 11 and 12 should be removed since these parameters are not yet agreed. The group has agreed that up to 8 different Rel. 17 Type 3 HARQ CBs can be configured simultaneously-depending on the UE capability-but not on how these different Rel. 17 Type 3 HARQ CBs will differ. With regards to row 11, the group has not agreed yet that these (up to 8) different Rel. 17 Type 3 HARQ CB configuration need to have an explicit RRC field specifying which CCs will be included in each Rel. 17 Type 3 HARQ CB configured. There is not such an agreement. The only agreements available are the ones specifying the option of configuring up to 8 different Rel. 17 Type 3 HARQ CBs. The content of these different Rel. 17 HARQ CB configurations and how they will be indicated is going to be discussed at the next meeting. E.g. a configuration might be imagined in which the 1st configured Rel. 17 Type 3 HARQ CB contains all HARQ Process IDs from the first CC, the 2nd configured Rel. 17 Type 3 HARQ CB contains all HARQ Process IDs from the second CC. This same example explains why the parameter of row 12 is not needed either. The parameter of Row 12 implies that for each configured Rel. 17 Type 3 HARQ CB, there is going to be an associated bitmap indicating the configured HARQ Process IDs to be reported with this Type 3 HARQ CB. This is not agreed yet. |
| ZTE | For row 7, we think DCI format 1\_2 should be added in the description.For the parameters in row 7, 8, 20, 22, we think they should be in PUCCH-config since the enhanced type3 CB or PUCCH carrier switching is performed within the PUCCH group. |
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### 2.1.4 NR-NTN [106bis-e-R17-RRC-NR-NTN]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
| Apple | On row 25, the value range of nrofHARQ-ProcessesForPDSCH-r17, we prefer to add some values between 16 and 32 for flexibility.  |
| ZTE | 1. For J3 (column J, row 3), 15 kHz can be added in the end.

The unit of K\_mac is number of slots for a given subcarrier spacing of 15 kHz.1. A typo in G21,I21,

harq-ProcessNumberSizeDCI-1-2-r17 -> HARQ-ProcessNumberSizeDCI-1-2-r17 |
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### 2.1.5 Positioning [106bis-e-R17-RRC-NR-ePos]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
| Ericsson | Row 5 and 6: the parameter srs-PosResourceSetId and srs- PosResourctId are use both for UL-TDOA (where it goes via RRC from the UE to the gNB) as well as in multi-RTT (where it goes from the UE to the LMF via LPP). We suggest to clarify that both the RRC and LPP protocols are impacted. Regarding row 63, 64, 65, the PRS priority window, measurement gap activation and priority indicator, are not yet fully resolved in RAN1 (for example, whether to use MAC CE or RRC to signal the processing window). We think they could be marked as “unstable”. The parameters could be either omitted from the table for now until we have a more stable design, or put in brackets.  |
| CATT | Row 5 and 6: Share the similar as Ericsson. “FFS for RAN2” can be changed to. “FFS for RAN2/RAN3”Regarding the parameters for measurement gap activation (Row 75, 77, 78 in the latest spreadsheet), the parameters can be considered as stable based on the latest agreements. Agreement:Support the following options (in the agreement made in RAN1#106-e) for a new mechanism of MG activation request for the purpose of positioning.* Option 2: by UE (via UCI or UL MAC CE)
	+ Select only one of UCI and UL MAC CE in RAN1#106bis-e
* Option 1: by LMF (via an NRPPa message)
	+ Note: This is transparent to the UE

Agreement:Support using UL MAC CE for MG activation request by UE (Option 2) for the purpose of positioning.Agreement:Support the following option (from the agreement made in RAN1#106-e) for a new MG activation procedure to be performed by the gNB for the purpose of positioning.* Option 2: DL MAC CE

FFS: Deactivation processFor the parameter for priority window and PRS priority indicator (Row 79, 80), we think they can also be considered as stable based on the following agreement. Agreement:• With regards to UE determining the PRS priority with other DL signal/channels within the PRS processing window for PRS measurement outside MG, **support the priority indicated by gNB**.* FFS: What are the other DL signals/channels

• With regards to the PRS processing window for PRS measurement outside MG, ***at least support the window indicated by gNB***. |
| Moderator | **@Ericsson/CATT**: Based on Rapporteure’s recommendation, Moderator suggests adopting the suggested updates for Row 5 and 6 while keep the status of remaining rows uchanged. I hope this recommendation is fine with Ericsson.**@All:** For Sheet Positioning in the next **version of Excelsheet (i.e. v006)** at folder [Collection of RRC parameters](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_106b-e/Inbox/drafts/8/%5B106bis-e-R17-RRC%5D/Collection%20of%20RRC%20parameters)* The proposed suggestion by Ericsson/CATT for Row 5 and 6 will be adopted by changing “FFS: RAN2” to “FFS: RAN2/RAN3”.

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| Nokia/NSB | Thanks for all the efforts. Nokia has the following wo comments. Sorry for not providing them earlier.:1. In Row 84 it should be updated to reflect the latest agreement. We suggest updating column J and P as follows. We also suggest to align column K with the above rows.

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| NR\_pos\_enh | Multipath/NLOS mitigation |   |   |   |   |  losNlosIndicator |  New |   | This parameter is used for LMF to include LoS/NLoS information for UE-based positioning. Indicators can be associated with either: Option 1: Each DL PRS resource for each TRP (working assumption) Option 2: Each TRP | [0, 0.1, …, 0.9, 1] |   |   |   | FFS: RAN2 | Agreement:• Positioning assistance data from LMF is enhanced for UE-based positioning by including LoS/NLoS indicators.Agreeement:* For UE-based positioning, support the following options for LoS/NLoS indicators within positioning assistance data:
	+ Option 1 (Working assumption): LMF associates UE-based LoS/NloS indicators with each DL PRS resource for each TRP
	+ Option 2: LMF associates UE-based LoS/NloS indicators with each TRP
* Note: For option 1, one LoS/NloS indicator is associated with one DL-PRS resource
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1. Row 87 could also be updated to reflect the latest agreement. Suggest to update Columns J and P as follows:

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| NR\_pos\_enh | Multipath/NLOS mitigation |   |   |   |   | ULAoAOfAdditionalPathPerSRSResource |  New |   | UL-AoA values per SRS resource for the additional path to be reported from gNB to LMF. Up to M=8 UL-AoA values can be reported per additional path.  | FFS |   |   |   |  FFS: RAN3 | Agreement:Reporting multiple UL-AoA values per SRS resource for the additional path is supported for at least UL TDOA and multi-RTT.• FFS: maximum number of UL-AoA values per additional path.Agreement: For hybrid positioning methods where UL TDOA and multi-RTT are used in addition to UL AoA, support reporting of up to M=8 UL-AoA values per additional path  |

 |
| Moderator | **@Nokia**: Based on Rapporteure’s recommendation, Moderator suggests adopting the suggested updates.**@All:** For Sheet Positioning in the next **version of Excelsheet (i.e. v006)** at folder [Collection of RRC parameters](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_106b-e/Inbox/drafts/8/%5B106bis-e-R17-RRC%5D/Collection%20of%20RRC%20parameters)* The proposed suggestion by Nokia for Row 84 and Row 87 will be adopted.
 |
| ZTE | Comments on the positioning RRC parameter list provided in **R1-2110390** (Updated #3 ePOS RRC parameters (R1-2110390).xlsx).Comment#1:For Row#13 ([maxNumOfPosSRSResourcesPerTxTEG]), we prefer to remove it since it is not related to any agreement we have made. We should also remove Row#37.Comment#2:For Row#16 (UETxTEG\_Request\_UL-TDOA), we may need another row for the request from LMF. At least serving gNB should receive the request from LMF before the request is sent to UE from serving gNB. Comment#3:For Row#65 (antennaInfoRequest\_DL-AOD), we don’t see the need to have this request from UE to LMF. We think it’s up to LMF to decide on whether the UE should be provided with antenna information.Comments#4:For Row#75 (MG\_ activationRequest), we should remove Row#75 since it has been captured in Row#77.Comment#5:We may need another row for MG\_ activationRequest from LMF to serving gNB according to the following agreement,Agreement:Support the following options (in the agreement made in RAN1#106-e) for a new mechanism of MG activation request for the purpose of positioning.* Option 2: by UE (via UCI or UL MAC CE)
	+ Select only one of UCI and UL MAC CE in RAN1#106bis-e
* Option 1: by LMF (via an NRPPa message)
	+ Note: This is transparent to the UE

Comment#6:For Row#78(MeasurementGapActivation), the column K should be revised as “DL MAC CE for MG activation ~~request~~ by gNB for the purpose of positioning.”Comment#7:For both Row#79 (PRS-ProcessingWindowIndication) and Row#79 (PRS-PriorityIndicator) , some comments are provided according to the following agreement,Agreement:* With regards to UE determining the PRS priority with other DL signal/channels within the PRS processing window for PRS measurement outside MG, support the priority indicated by gNB.
	+ - FFS: What are the other DL signals/channels
* With regards to the PRS processing window for PRS measurement outside MG, at least support the window indicated by gNB.
* Prefer to remove “ FFS RRC/MAC CE. FFS per CC/PFL/UE” in column K

Prefer to “FFS: RAN2/RAN3” in column P since we haven’t decided the coordination between serving gNB and LMF. The PRS-ProcessingWindowIndication and PRS-PriorityIndicator decided by serving gNB may be sent to LMF. And Finally the PRS-ProcessingWindowIndication and PRS-PriorityIndicator are included in location request message from LMF. |

### 2.1.6 RedCap [106bis-e-R17-RRC-REDCAP]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
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### 2.1.7 Power saving [106bis-e-R17-RRC-PowSav]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
| Apple  | For **row 4 to row 12**, further agreements have been made for [TRS-ResourceConfig], including the common parameters for a TRS resource set. In [106bis-e-NR-R17-PowSav-04] email discussion, we agreed that the agreements will be directly reflected in the RRC parameter list. The spreadsheet should be updated accordingly to reflect the agreements. In case the time is too tight for the update, can we at least include the agreement on the “comment” column of row 4?**Agreement**Configuration of TRS/CSI-RS occasion(s) for idle/inactive UEs include a list of one or more TRS resource sets, where:        a TRS resource set can be configured to includeo   a set of TRS resources up to two consecutive slots,  Note: a TRS resource is same as Rel-15/16, i.e. a CSI-RS in a symbol.o   at least common configuration parameters:  a QCL reference  firstOFDMSymbolInTimeDomain,  ‘frequencyDomainAllocation for row1’, ‘startingRB’ ,‘nrofRBs’,’powerControlOffsetSS’, periodicityAndOffset’  FFS        scramblingID,        a TRS resource set ID, number of slots {1, 2} or number of symbols {2, 4} if supported        Note: the ‘TRS resource set’ configuration is not (necessarily) identical to ‘NZP-CSI-RS-ResourceSet’ configuration for TRSin R15/16. |
| CATT | We agree with Apple’s comments on TRS resource configuration.For Row3, PONumPerPEI was agreed to at least up to 4 POs within a paging frame. However, it is FFS for the case of POs cross paging frame. Thus, we should not put the limitation to have a multiple POs within a paging frame as follows, Number of PO(s) indicated by a PEI. ~~If there are multiple POs, they are within the same Paging Frame (PF)~~The value of PONumPerPEI is only agreed to have up to 4 within the paging frame. Total number of POs is not yet agreed. The value range should be TBD only.For Row 4, the parameter name should be pei~~r~~SearchSpace |
| ZTE | A row with regarding to the valid time duration for TRS resource is needed according to the following agreements.**Agreement**At least for paging PDCCH based L1 availability indication of TRS/CSI-RS at the configured occasion(s) to the idle/inactive UEs, the L1 availability indication is valid for a time duration starting from a reference point, where* the time duration is a validity duration configured by higher layer,
	+ FFS applicable values, e.g. # of DRX cycles, or multiple of default paging cycle duration (i.e. modification period)
	+ FFS UE doesn’t expect inconsistent L1 based indication during the time duration
* the reference point for start of the validity duration is one of the following alternatives:
	+ Alt1: SFN of the first PF from the next DRX cycle
	+ Alt2: SFN of the first PF from the current DRX cycle where UE receives the indication
	+ Alt3: based on SFN configured by higher layer, i.e. modification period configured as multiple of default paging cycle duration
	+ Alt4: start of the PF for the PO where UE receives the indication
	+ Note: the DRX cycle in Alt1 and Alt2 is the default paging cycle broadcast in SIB
	+ Note: The SFN for the first PF is ~~for (UE mod N) = 0, and can be~~ calculated by (SFN + PF\_offset) mod T = 0
* the time duration can be optionally configured by gNB
	+ when the time duration is not configured, one of the following alternatives can be considered:
		- Alt1: the availability indication is valid until when the UE receives another availability indication.
		- Alt2: the availability indication is valid until L1 availability indication is changed by network
		- Alt3: default time duration e.g. default paging cycle
* FFS whether and how to handle the miss detection issue of L1 signaling
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### 2.1.8 Coverage [106bis-e-R17-RRC-CovEnh]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
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### 2.1.9 eIAB [106bis-e-R17-RRC-eIAB]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
| ZTE | 1. Comment on row 3：It is better to update the description part to align with the latest agreement, e.g. Indicates the RB set size in number of PRBs used for frequency domain ~~multiplexing between given IAB-DU and IAB-MT cells~~ H/S/NA configuration of a given IAB-DU's cell.
2. Comment on row 4：For the description part, from our point of view, the Frequency Domain H/S/NA Configuration Reference SCS should be configured per IAB DU's cell, propose to update it as: Indicates reference SCS to be applied to ~~Rel-17 IAB-DU-Resource-Configuration-H/S/NA-Config at the IAB DU~~ Rel-17 frequency-domain IAB-DU-Resource-Configuration-H/S/NA-Config at a given IAB-DU's cell.
3. Comment on row 8：Also for the description part, it is more clear to say:Signaling from an IAB-node/IAB-donor~~a parent node~~ to a child node indicating beams of an the child IAB-DU in the direction of which simultaneous operation is restricted.
4. Comment on row 16：Since we have not discuss the granularity of the Child IAB-MT link NA Resource Configuration, and no agreement is achieved, we propose to leave it FFS, some changes on column J and K as below:

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| IAB-donor CU indicates, to an IAB-node/donor DU, NA attribute ~~per D/U/F resource type within a slot~~, for a child IAB-MT. | FFS~~{NA Downlink: ENUMERATED (true, false), NA Uplink: ENUMERATED (true, false)NA Flexible: ENUMERATED (true, false)} per slot, per child IAB-MT~~  |

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### 2.1.10 Sidelink [106bis-e-R17-RRC-Sidelink]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
| ZTE | Comment on row 10, 11 and 12：Currently only work assumptions are achieved by RAN1, and the WAs are expected to be confirmed in next RAN1 meeting, so the following three parameters should be enclosed in square bracket, e.g. [condition1A2Scheme1Disabled], [thresRSRPCondition1B1Option1Scheme1], [thresRSRPCondition1B1Option2Scheme1]. |
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### 2.1.11 MBS [106bis-e-R17-RRC-MBS]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
| Qualcomm | 1) For row 31, This “repetitionNumber-Multicast-SPS” is not needed. Based on the following agreement, the repetition number for SPS (in Config B) will be based on PDSCH-TimeDomainResourceAllocation configured in PDSCH-Config-Multicast. No additional RRC parameter is needed in SPS-Config-Multicast. Agreement:For slot-level repetition for SPS GC-PDSCH for multicast RRC\_CONNECTED UEs.* + Config A or Config B can be configured to UE:
		1. (Config A) UE can be optionally configured with *pdsch-AggregationFactor* per *SPS-Config-Multicast*.
		2. (Config B) UE can be optionally configured with TDRA table with *repetitionNumber* as part of the TDRA table in *PDSCH-Config-Multicast*. If UE is configured with Config B, UE does not expect to be configured with Config A for the same SPS group-common PDSCH.
	+ For Config A, if *pdsch-AggregationFactor* in *SPS-Config-Multicast* is not configured, default value is
		1. Alt1: equal to 1.

2) In row 35, it should be indicated as FFS, i.e., further down selection is to be done.“FFS: per SPS-config index or per G-CS-RNTI”3) For row 43, 44, 45, based on the RAN1 agreements, we suggest modifying the following modification to differentiate those parameters with multicast ones:* “pdcch-DMRS-ScramblingID-Broadcast” should be configured “Per CFR, inlucded in PDCCH-Config-Broadcast”, instead of “Per G-RNTI”
* “dataScramblingIdentityPDSCH-Broadcast” should be configured “Per CFR, in PDSCH-Config-Broadcast”, instead of “Per G-RNTI”
* “scramblingID0-Broadcast” should be configured “Per CFR, in PDSCH-Config-Broadcast”, instead of “Per G-RNTI”.

4) Based on the latest RAN1 agreements, the following parmaters are still missing:* mcs-Table configured per CFR, in PDSCH-Config-Multicast, at least the default value needs to be informed to RAN2.
* rbg-size configured per CFR, in PDSCH-Config-Multicast
* prb-BundlingType configured per CFR, in PDSCH-Config-Multicast
* slot-level repetition parameter for MTCH configured per CFR, in PDSCH-Config-Broadcast

Agreement: 🡪 for mcs-TableFor determination of maximum modulation order for LBRM and TBS determination for GC-PDSCH,* if *mcs-Table* in *PDSCH-Config* for MBS is not configured in CFR, Table 5.1.3.1-1 in TS38.214 is used (similar as the default value in R16).

Agreement: 🡪 for RBG, PRGRBG and PRG for multicast GC-PDSCH in CFR are defined using the same procedure as for unicast PDSCH in DL BWP.* + - * For RBG, the size is defined based on the starting PRB of the CFR, size of the CFR and the higher layer parameter *rbg-Size* configured by *PDSCH-Config* for multicast in the CFR.
			* For PRG, the size is defined based on the starting PRB of the CFR, size of the CFR and precoding granularity for multicast which can be equal to one of the values among {2, 4, wideband}.
			* Note: Whether the RBG and PRG size for multicast (configured directly or indirectly) is the same as for unicast can be discussed separately.

Agreement: 🡪 for broadcast slot-level repetitionFor broadcast reception with UEs in RRC\_IDLE/INACTIVE states, support slot-level repetition for MTCH. |
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### 2.1.12 DSS [106bis-e-R17-RRC-DSS]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
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### 2.1.13 MR-DCs Scell Act. [106bis-e-R17-RRC-NR-DC]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
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### 2.1.14 NB-IoT&eMTC [106bis-e-R17-RRC-NB-IoT-eMTC]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
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### 2.1.15 IoT NTN [106bis-e-R17-RRC-IoT-NTN]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
| Apple | 1. Rows 2 and 23, we do not think the parameter “UEPre-compensationNB-r17” is necessary since uplink time and frequency precompensation should always be supported for basic IoT NTN operation.
2. Rows 4-15 and 25-36 should be “unstable” since they are based on working assumption from NR NTN, which need to be confirmed.
 |
| ZTE | 1. A typo in I40, I41 (column I, row 40) : UESpeificKoffset-r17 -> UESpecificKoffset-r17
2. For P3, P24 (column P, row 3), it can be updated with the newest agreement in NR-NTN as follows:

In NTN, the Network may optionally indicate one or more of the following parameters:* Common TA , Common TA drift rate and Common TA drift rate variation.
* FFS: Common TA third order derivative.

FFS: Details of combination of Common TA parameters |
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### 2.1.16 5G-Broadcast [106bis-e-R17-RRC-LTE-Bcast]

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| **If you have any comment for a row in the Sheet corresponding to this WI, please provide your comment below by indicating the Row number.**  |
| **Company** | **Comment** |
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## 2.2 Draft LS to RAN2 on RRC parameters

A draft for LS to RAN2 is provided and available at folder [Draft LS](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_106b-e/Inbox/drafts/8/%5B106bis-e-R17-RRC%5D/Draft%20LS). Please provide your comments, if any, on the **latest version of draft LS**. Your review, specially from 20th of Oct. ia very appreciated.

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| **Company** | **Comment** |
| Moderator | **@All**: After uploading the next **version of Excelsheet (i.e. v006)** at folder [Collection of RRC parameters](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_106b-e/Inbox/drafts/8/%5B106bis-e-R17-RRC%5D/Collection%20of%20RRC%20parameters), Moderator will upload two files with clean version of consolidated lists of stable rows for LTE and NR in [Draft LS](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_106b-e/Inbox/drafts/8/%5B106bis-e-R17-RRC%5D/Draft%20LS) for the final review. |
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## 2.3 Improve RRC parameters preparation activity

The document in [1] was an attempt to address our challenges in RAN1 for the task of RRC parameters preparation based on our previous experiences. However, it was not feasible to seek input from all delegates in RAN1 on identify what the challenges are and how they can be handled.

Please consider this section to share your questions, comments and suggestions that could help to further improve our WoW within RAN1, as well as inter-action with RAN2 with respect to RRC parameter preparation. The more we know, the more we can improve. Thank You!

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| **Company** | **Comment** |
| Moderator | Differentiation between RRC IE and UE capability signalling triggered by following Q&A:

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| **Question/comment by Youngwoo (IDC):**For 60 GHz, timeDurationForQCL, beamSwitchTiming, beamReportTiming and maxNumberRxTxBeamSwitchDL are captured as existing RRC parameters with new candidate values. However, those parameters are actually UE capability signaling not RRC IE. So, if my understanding is correct, then those parameters should removed from this sheet. **Answer from 38.331 Rapporteure**I agree it is a bit unfortunate with this mix. UE capabilities have to be in the Feature List. In RAN2, Parameter List and Feature List are handled separately and (of course) impacts completely different parts of the signalling.So the parameters listed below should clearly appear in the Feature List. The parameters COULD be kept also in the Parameter list for information purpose if there is a reason. But then this fact should be clearly indicated in those cases. E.g.* NOTE: This is a UE capability parameter and is listed here for information. It appears also in the Feature List

Maybe even better would be to add free text* For Information: Existing UE capability parameters, timeDurationForQCL, beamSwitchTiming, beamReportTiming and maxNumberRxTxBeamSwitchDL appear with new candidate values in the Feature List.

Maybe we had cases like this before, I tend to recall RAN2 “discovered” a UE capability had been squeezed in into the Parameter list, and this of course creates confusion in RAN2. I might recall wrongly, though. |

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# 3 Conclusion

TBD

# 4 References

1. R1-2110415, Recommendations for RAN1 RRC Parameter Preparation; Moderator (Ericsson)