Companies please share their inputs on the excel spreadsheet in ‘/tsg\_ran/WG1\_RL1/TSGR1\_106-e/Inbox/drafts/8.12.1/RRC Parameters/’.

## Inputs on version-000

Please share your inputs, if any, in the following table

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| --- | --- |
| **Company** | **Input** |
| Qualcomm | For G-RNTI/G-CS-RNTI:We agree that the configuration is via unicast RRC signaling. But we are not sure it is common or different for BWPs, for cells or cell groups. We haven’t discussed whether G-RNTI/G-CS-RNTI is configured per BWP, per serving cell or per cell-group. Note that C-RNTI is assigned/modified during establishment/modification of RRC connection, but MCS-C-RNTI and CS-RNTI are configured per cell-group, i.e., in *PhysicalCellGroupConfig*, by unicast RRC signaling*.*For locationAndBandwidth-Multicast, The default value should be FFS instead of N/A? As discussed in previous RAN1 meetings, majority companies think it may be equal to that of associated dedicated BWP, if not configured. |
| Apple | One additional RRC parameter is missed, i.e., sps-config-Multicast. The related agreements are showing below.Agreement:From RAN1 perspective, the CFR (common frequency resource) for multicast of RRC-CONNECTED UEs, which is confined within the frequency resource of a dedicated unicast BWP and using the same numerology (SCS and CP), includes the following configurations:• Starting PRB and the number of PRBs • One PDSCH-config for MBS (i.e., separate from the PDSCH-Config of the dedicated unicast BWP)• One PDCCH-config for MBS (i.e., separate from the PDCCH-Config of the dedicated unicast BWP)• SPS-config(s) for MBS (i.e., separate from the SPS-Config of the dedicated unicast BWP) |
| MediaTek | Regarding G-RNTI/G-CS-RNTI, it is common for all UEs in one MBS group, and RAN2 also achieved some following agreements in RAN2#114-e meeting.* One-to-one mapping between G-RNTI and MBS session is supported in NR MBS. Other mappings FFS
* One-to-one mapping between G-CS-RNTI and MBS session is supported in NR MBS. Other mappings FFS.

Thus, if we say the G-RNTI/G-CS-RNTI configuration is per UE, it is not accurate and may make RAN2 confused. We suggest modify the wording as “per service” instead of “per UE”.Regarding the missed parameter as Apple mentioned, we have the following comments:The following RRC parameters are missed: *pdcch-DMRS-ScramblingID-multicast, dataScramblingIdentityPDSCH-multicast, pdcch-DMRS-ScramblingID-multicast.* Based on thefollowing agreements, it is clear that these parameters can be separate configured in its own CFR.Agreement:For initializing scrambling sequence generator for GC-PDCCH with the second DCI format,$n\_{ID}$ equals the higher layer parameter *pdcch-DMRS-ScramblingID* if it is configured in the CORESET in a CFR used for the GC-PDCCH;$n\_{ID}=N\_{ID}^{cell}$, otherwise.* FFS: Values for $n\_{RNTI}$. Choices include one or more of the following:
	+ Alt1: G-RNTI used for the GC-PDCCH.
	+ Alt2: 0
	+ Alt3: Other fixed values

Agreement:For initializing scrambling sequence generator for GC-PDSCH scheduled by the second DCI format for multicast received in Type-x CSS, * $N\_{ID}$ equals the higher layer parameter *dataScramblingIdentityPDSCH* if it is configured in *PDSCH-Config* in a CFR used for GC-PDSCH and the RNTI equals the G-RNTI or G-CS-RNTI;$ N\_{ID}=N\_{ID}^{cell}$ otherwise.
* $n\_{RNTI}$ corresponds to the RNTI associated with the GC-PDSCH transmission (i.e., the G-RNTI used by the scheduling GC-PDCCH, or the G-CS-RNTI used by the SPS GC-PDSCH activation PDCCH)

Agreement:For initializing sequence generator for DMRS of GC-PDCCH with the second DCI format received in Type-x CSS, * $N\_{ID} $equals the higher layer parameter *pdcch-DMRS-ScramblingID* if it is configured in the CORESET in a CFR used for the GC-PDCCH;$ N\_{ID}=N\_{ID}^{cell}$ otherwise.
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| ZTE | 1st comment:Agree with other companies that we should first discuss whether G-RNTI is per-CFR, per-BWP, per-Cell, per UE or anything else. Besides, G-RNTI and G-CS-RNTI should be a list since UE may need to receive multiple services.2nd comment:Search space also needs to be a list since UE can be configured with multiple search space sets for MBS (probably for different MBS services).3rd comment:It seems we may also need to add CORESET configuration with CFR.controlResourceSetToAddModList      SEQUENCE(SIZE (1..3)) OF ControlResourceSet                      OPTIONAL,   -- Need N |
| FL’s response | @Qualcomm @ MediaTek @ZTEThe configuration of *G-RNTI/G-CS-RNTI* and the default value of *locationAndBandwidth-Multicast* are revised to FFS, which can be discussed in the future.In addition, regarding the other comments from Apple/MediaTek/ZTE, as a general discussion point, whether the current parameters in PDCCH-Config/PDSCH-Config for unicast can be reused for PDCCH-Config-Mutlicast/PDSCH-Config-Mutlicast, or we have to introduce new parameters for them with suffix “-Multicast” added (e.g., *searchSpacesToAddModList-Multicast, controlResourceSetToAddModList-Multicast, pdcch-DMRS-ScramblingID-Multicast dataScramblingIdentityPDSCH-Multicast,* …) in PDCCH-Config-Mutlicast/PDSCH-Config-Mutlicast. More companies’ views are invited.@AppleThe intention of *sps-ConfigToAddModList-Multicast* was to cover the agreement cited by you. Although I understand that both *sps-Config* and *sps-ConfigToAddModList-r16* are included in *BWP-DownlinkDedicated* in current spec, I think for multicast only *sps-ConfigToAddModList-Multicast* may be enough to be included in *CFR-Config-Multicast* since it can cover all the cases including one and more than one SPS configurations for multicast, that is the reason why I only include *sps-ConfigToAddModList-Multicast* in *CFR-Config-Multicast*. However, regarding whether the current *sps-Config* for unicast can be reused for each element to be included in *sps-ConfigToAddModList-Multicast* or a new *sps-Config-Multicast* should be introduced, my current understanding is that the current *sps-Config* for unicast can be reused for each element to be included in *sps-ConfigToAddModList-Multicast*, but more companies’ views are invited regarding this. If companies prefer to introduce a new *sps-Config-Multicast* for each element to be included in *sps-ConfigToAddModList-Multicast* in *CFR-Config-Multicast*, I can add it later. Currently I added an FFS whether the current *SPS-Config* for unicast can be reused or a new *SPS-Config-Multicast* should be introduced for each element to be included in *sps-ConfigToAddModList-Multicast*.@ MediaTekThe existing *pdcch-DMRS-ScramblingID* is configured in *controlResourceSet.* In my understanding, if a *controlResourceSet* is configured in *PDCCH-Config-Multicast* in *CFR-Config-Multicast*, then UE can identifythat the *pdcch-DMRS-ScramblingID* in the *controlResourceSet* is used for multicast. I’m not sure whether a new *pdcch-DMRS-ScramblingID-Multicast* should be configured on top of *pdcch-DMRS-ScramblingID* or not*.* Similarly, the existing *dataScramblingIdentityPDSCH* is configured in *pdsch-Config*. In *pdsch-Config-Multicast* is configuredin *CFR-Config-Multicast*, the *dataScramblingIdentityPDSCH* in *pdsch-Config-Multicast* is used for multicast. Regarding these two issues, more companies’ views are invited. If most companies suggest to introduce *pdcch-DMRS-ScramblingID-multicast* and *dataScramblingIdentityPDSCH-multicast*, I can add them later*.* In the description of *pdcch-Config-Multicast* and *pdsch-Config-Multicast*, we also mentioned that it is FFS whether all the parameters of the existing *pdcch-Config/pdsch-Config* are needed or not for *pdcch-Config-Multicast/pdsch-Config-Multicast*. @ZTERegardingwhether *searchSpacesToAddModList* and *controlResourceSetToAddModList* in *pdcch-Config* can be reused for *pdcch-Config-Multicast*, more views are invited*.* |

## Inputs on version-001

Please share your inputs, if any, in the following table

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| --- | --- |
| **Company** | **Input** |
| Huawei, HiSilicon | Regarding discussion point whether current parameters in PDCCH-Config/PDSCH-Config for unicast can be reused for PDCCH-Config-Mutlicast/PDSCH-Config-Mutlicast, or we have to introduce new parameters for them with suffix “-Multicast” added, our understanding is that from signaling formulation perspective, either all parameters are included in PDCCH-Config-Mutlicast/PDSCH-Config-Mutlicast and up to NW to configure the same or different values for unicast and multicast in separate configurations, or we discuss all such parameters to figure out which parameters are not needed to be configured differently from that for unicast so the configuration in PDCCH-Config /PDSCH-Config is sufficient and could be used for multicast as well. Regarding SPS configuration for multicast, we think *sps-ConfigToAddModList-Multicast* in *CFR-Config-Multicast* is sufficient including one or more SPS configurations for multicast. So far, SPS-Config-multicast is not needed because the structure would be the same as SPS-Config for unicast and differentiating SPS for unicast and multicast is via SPS configuration index. Regarding the *pdcch-DMRS-ScramblingID, dataScramblingIdentityPDSCH,* wethink they are needed because the ID configuration for multicast is probably different from that for unicast. Regarding the comment of search space and CORESET, if Type-X CSS is one of existing four common search space, then *searchSpaceMulticast* is just index pointing to that common search space configuration which also associates with one CORESET ID, so CORESET is not needed to be listed in the spreadsheet. |
| Samsung | 1. For the G-RNTI(s)/G-CS-RNTI(s), OK to further discuss. However, Rel-17 multicast is for single-cell operation and that can only be the PCell based on Rel-16 (there is possibility for DSS in Rel-17). Then, the only question is whether to have the configuration be CFR-specific or UE-specific. CFR-specific is more flexible and can of course include support of UE-specific, but a justification for CFR-specific should be based on “need” and not “flexibility”.
2. *PDCCH-Config-Mutlicast*/*PDSCH-Config-Mutlicast*. RAN2 will probably pick different names, e.g. with the –r17 suffix (i.e. the name can be a RAN2 issue). Regarding the parameters to be included, not all are needed but probably all unnecessary ones are the ones that are optional (i.e. can rely on the NW to do the proper configuration) - can also discuss next time.
3. *SearchSpaceMulticast* can be a “*SearchSpaceExt-r17*”, similar to what was done in Rel-16, and can be in *PDCCH-Config* or in *PDCCH-Config-Mutlicast*. CORESET ID is not needed (regardless of whether the CSS set is a Type-3 or a Type-X).
4. Configurations for PUCCH, HARQ-ACK feedback (NACK-only, ACK/NACK - HARQ-ACK codebook (Type 1/2)), enable/disable HARQ-ACK, …, seem to be missing?
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| Ericsson | Regarding a new coreset parameter: it should be possible to declare a separate MBS CORESET, according to the agreement that coreset should be in CFR:Agreements: For PTM transmission scheme 1, the CORESET for group-common PDCCH is configured within the common frequency resource for group-common PDSCH.Regarding SPS config for multicast, it should be enough to have the SPS-config-ID coupled to the G-CS-RNTI (s) in a MBS-SPS config within CFR configuration. A unicast SPS config is required since it is possible to use unicast retransmission according to the following agreement:Agreement:The retransmission scheme for a given SPS group-common PDSCH can be either PTM scheme 1 or PTP.* FFS: Whether PTM scheme 1 retransmission and PTP retransmission can be used simultaneously for different UEs in the same MBS group

Therefore we should not always need to have a full SPS-config in the CFR config |
| Moderator | Based on companies’ comments, I updated the RRC parameters in v002.Regarding the parameters in *PDCCH-Config-Multicast/PDSCH-Config-Multicast*, I agree that the concrete name is a RAN2 issue. We use “PDCCH-Config-Multicast” does not mean that it must be a separate IE, in my understanding, it is also possible to extend the existing PDCCH-Config to support multicast with some new parameters added, but it is up to RAN2 decision. For the value range, I explained that the parameters in *PDSCH-Config-Multicast* are the same as that in *PDSCH-Config* for unicast except the new fields: *maxMIMO-Layers-Multicast, xOverhead-Multicast, [dataScramblingIdentityPDSCH-Multicast]*, and I also added FFS whether other new fields are needed in PDSCH-Config-Multicast and whether some parameters in PDSCH-Config are not needed for PDSCH-Config-Multicast.It is FFS whether some parameters in PDSCH-Config are not needed for PDSCH-Config-Multicast.I added *dataScramblingIdentityPDSCH-Multicast* in *PDSCH-Config-Multicast*, but I put it in [] to invite more views on this. Similarly, I added *pdcch-DMRS-ScramblingID-Multicast* in *ControlResourceSet* but put it in [].I added *searchSpacesToAddModList-Multicast* in *pdcch-Config-Multicast*, which is a list of *searchSpace-Multicast*. I agree with Samsung that “*SearchSpaceExt-r17*” which is similar to what was done in Rel-16 can be used for Rel-17. In my understanding, “*SearchSpaceExt-r17”* mainly includes some new or updated parameters on top of previous version, so I think currently we can first use *searchSpace-Multicast* in the list to keep consistent with other parameters’ name for multicast, but for the value range of *searchSpace-Multicast*, I explained the parameters in *searchSpace-Multicast* are the same as in existing *SearchSpace* except the DCI formats. I also added *dci-Format[1-0]* and *dci-Format[1-1]* in *searchSpace-Multicast*. It can be up to RAN2 to finally use “*SearchSpaceExt-r17*” similar to what was done in Rel-16.Regarding the Ericsson’s comment to add a separate MBS CORESET, more companies’ views are invited.@Ericsson, regarding your comment for SPS configuration, I’m not sure I understand your point. Do you suggest some updates besides *sps-ConfigToAddModList-Multicast*?@Sumsung, regarding the RRC configurations for reliability, we have a separate RRC parameter list discussed in draft folder 8.12.2. |
| TD Tech, Chengdu TD Tech | We think the unit of each parameter for NR MBS needs to be studied clearly. The parameters for NR MBS can be classified into three classes:1. For some parameters (for example, G-RNTI/G-CS-RNTI) , the unit can be:
* per MBS session per cell:

The related parameter can be configured independently in each cell. The different MBS sessions in a cell usually have different parameter values. * per MBS session per area or per MBS session per cell group

The related parameter is configured for each MBS session of the area or cell group. The cells in the area or cell group have the same parameter value for the same MBS session.For example, the area or cell group can consist of the cells under the control of the same gNB-DU. An MBS session is transmitted in the area or cell group with same G-RNTI/G-CS-RNTI.* per MBS session group per cell

The related parameter can be configured independently for each MBS session group in each cell. The different MBS sessions in an MBS session group in a cell have same parameter value.For example, a group of MBS sessions are sent to a same group of RRC\_CONNECTED UEs. If the one-to-one mapping between G-RNTI/G-CS-RNTI and MBS session group is supported, the unit of G-RNTI/G-CS-RNTI is per MBS session group per cell.* per MBS session group per area or per MBS session group per cell group

The related parameter can be configured for each MBS session group of the area or cell group. The cells in the area or cell group have the same parameter value for the same MBS session group. For example, a group of MBS sessions are transmitted to a same group of RRC\_CONNECTED UEs in the area or cell group. If the one-to-one mapping between G-RNTI/G-CS-RNTI and MBS session group is supported, the unit of G-RNTI/G-CS-RNTI can be per MBS session group per cell.1. For some parameters (for example, CFR), the unit can be:
* per BWP per cell
* per BWP per area or per BWP per cell group

CFR has many configuration scenarios, therefore CFR per BWP is too crude to indicate each feasible scenario.We suggest to add the following choices to show each feasible configuration scenario for CFR:Scenario 1: CFR per BWP per cellScenario 1 is the most common scenario, which means that the CFR is configured for each BWP of the cell. The different cells have the independent CFR configuration.Scenario 2: CFR per BWP per area or CFR per BWP per cell groupScenario 2 is a feasible scenario, which means that the same CFR on the same BWP is applied in each cell of the area or in each cell of the cell group. That is, the different cells in the area or the cell group have the same CFR on the same BWP.1. For some parameters (for example, starting position, bandwidth, CORESET/SS and PDCCH/PDSCH configuration of CFR), the unit can be
* per CFR

We suggest to update the unit of each parameter in the RRC parameter list based on the above classes.For example, the unit of CFR is * per BWP per cell
* FFS: per BWP per area/cell group

The unit of G-RNTI/G-CS-RNTI is * per MBS session per cell
* FFS: per MBS session per area/cell group, per MBS session group per cell or per MBS session group per area/cell group.

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