**3GPP T****SG-RAN WG2 Meeting #119-e R2-220xxxx**

**E-Meeting, Aug 17 – 29, 2022**

**Agenda item:**  **5.1.3.1**

**Source: Nokia, Nokia Shanghai Bell**

**Title: Report of [AT119-e][007][NR1516] RRC Conn Control I (Nokia)**

**Document for: Discussion and Decision**

# Introduction

This is the report of the following offline discussion covering the following:

* [AT119-e][007][NR1516] RRC Conn Control I (Nokia)

 Scope: Treat R2-2208270, R2-2208271, R2-2207258, R2-2207259, R2-2207260, R2-2207263, R2-2207264, R2-2207265, R2-2207266, R2-2207942, R2-2206918, R2-2207550, R2-2207551, R2-2207552, R2-2207553, R2-2207603, R2-2207604, R2-2207605, R2-2207606, R2-2207139, R2-2207140, R2-2207142, R2-2207143, Determine agreeable parts, For agreeable parts, agree CRs.

 Intended outcome: Report, Agreed CRs, LS out if applicable

 Deadline: Schedule 1

L1 Parameters

[R2-2208270](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2208270.zip) Correction of PUSCH repetition configuration Qualcomm Incorporated CR Rel-16 38.331 16.9.0 3394 - F NR\_IIOT-Core

[R2-2208271](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2208271.zip) Correction of PUSCH repetition configuration Qualcomm Incorporated CR Rel-17 38.331 17.1.0 3395 - A NR\_IIOT-Core

[R2-2207258](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207258.zip) P-Max definition in SIB1 and dedicated signalling Nokia, Nokia Shanghai Bell CR Rel-15 38.331 15.18.0 3238 - F NR\_newRAT-Core

[R2-2207259](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207259.zip) P-Max definition in SIB1 and dedicated signalling Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.9.0 3239 - A NR\_newRAT-Core

[R2-2207260](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207260.zip) P-Max definition in SIB1 and dedicated signalling Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3240 - A NR\_newRAT-Core

[R2-2207263](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207263.zip) Correction to firstOFDMSymbolInTimeDomain Nokia, Nokia Shanghai Bell discussion Rel-15 NR\_newRAT-Core

[R2-2207264](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207264.zip) Correction to firstOFDMSymbolInTimeDomain Nokia, Nokia Shanghai Bell CR Rel-15 38.331 15.18.0 3241 - F NR\_newRAT-Core

[R2-2207265](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207265.zip) Correction to firstOFDMSymbolInTimeDomain Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.9.0 3242 - A NR\_newRAT-Core

[R2-2207266](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207266.zip) Correction to firstOFDMSymbolInTimeDomain Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3243 - A NR\_newRAT-Core

[R2-2207941](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207941.zip) Correction on the field description for highSpeedDemodFlag Huawei, HiSilicon CR Rel-16 38.331 16.9.0 3329 - F NR\_HST-Core

NR-DC Power Control

[R2-2206918](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2206918.zip) Reply LS on power control for NR-DC (R1-2205448; contact: Nokia) RAN1 LS in Rel-17 LTE\_NR\_DC\_CA\_enh-Core To:RAN2, RAN4

Moved from 5.1.1

[R2-2207550](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207550.zip) NR DC Power control Nokia, Nokia Shanghai Bell CR Rel-16 38.306 16.9.0 0770 - F LTE\_NR\_DC\_CA\_enh-Core

[R2-2207551](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207551.zip) NR DC Power control Nokia, Nokia Shanghai Bell CR Rel-17 38.306 17.1.0 0771 - A LTE\_NR\_DC\_CA\_enh-Core

[R2-2207552](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207552.zip) NR DC Power control Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.9.0 3280 - F LTE\_NR\_DC\_CA\_enh-Core

[R2-2207553](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207553.zip) NR DC Power control Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3281 - A LTE\_NR\_DC\_CA\_enh-Core

[R2-2207603](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207603.zip) Correction on NR-DC power control vivo CR Rel-16 38.331 16.9.0 3290 - F LTE\_NR\_DC\_CA\_enh-Core

[R2-2207604](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207604.zip) Correction on NR-DC power control vivo CR Rel-16 38.306 16.9.0 0772 - F LTE\_NR\_DC\_CA\_enh-Core

[R2-2207605](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207605.zip) Correction on NR-DC power control vivo CR Rel-17 38.331 17.1.0 3291 - A LTE\_NR\_DC\_CA\_enh-Core

[R2-2207606](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207606.zip) Correction on NR-DC power control vivo CR Rel-17 38.306 17.1.0 0773 - A LTE\_NR\_DC\_CA\_enh-Core

[R2-2207139](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207139.zip) Clarification on FR2 p-max parameters OPPO CR Rel-16 38.331 16.9.0 3220 - F LTE\_NR\_DC\_CA\_enh-Core

[R2-2207140](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207140.zip) clarification on FR2 p-max parameters OPPO CR Rel-17 38.331 17.1.0 3221 - A LTE\_NR\_DC\_CA\_enh-Core

[R2-2207142](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207142.zip) Clarification on powe sharing UE capability OPPO CR Rel-16 38.306 16.9.0 0760 - F LTE\_NR\_DC\_CA\_enh-Core

[R2-2207143](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207143.zip) Clarification on powe sharing UE capability OPPO CR Rel-17 38.306 17.1.0 0761 - A LTE\_NR\_DC\_CA\_enh-Core

*Moved from 6.24.1*

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| --- | --- |
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#  Discussion

## **2.1  Correction of PUSCH repetition configuration**

[1] [R2-2208270](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2208270.zip) Correction of PUSCH repetition configuration Qualcomm Incorporated CR Rel-16 38.331 16.9.0 3394 - F NR\_IIOT-Core

[2] [R2-2208271](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2208271.zip) Correction of PUSCH repetition configuration Qualcomm Incorporated CR Rel-17 38.331 17.1.0 3395 - A NR\_IIOT-Core

In the above CRs, the proponent argues for the first issue that due to the fields *pusch-RepTypeIndicatorDCI-0-1/0-2* being need R the network needs to always provide some configuration as it is not clear what the UE applies as a default when the field is not configured. The second issue is that the IEs *mappingtype-r16* and *startSymbolAndLength-r16* are both optional but the associated condition are “optionally present if pusch-RepTypeIndicatorDCI-0-1 is set to pusch-RepTypeA, Need R” and thus connected to the first issue. This dependency needs to be made clear.

**Question 1-1: Do companies agree that the network always configures pusch-RepTypeIndicatorDCI-0-1/0-2 when pusch-TimeDomainAllocationListDCI-0-1/0-2 is present?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | See comments | On the first change, we think it is not really required to be configured, as the baseline operation is since Rel-15 PUSCH repetition type A. So, there is no need to configure this. On the 2nd change, CR is correct that for PUSCH rep. type A the RRC parameter startSymbolAndLength needs to be configured. But with the same argument brought up here, there is a need to configure start & length for PUSCH repetition type B (for the RepTypeB) would need to be configured. So, we think the CR is not complete in this respect. Hence, if we agree that we don’t need to configure *pusch-RepTypeIndicatorDCI-0-1/02* – i.e. we don’t accept the first change then we would need to use the negative / inverse (i.e. not configured for RepTypeB), then this could look like. And for RepTypeB the mandatory start & length.Shouldn’t the CR also impact (NG)EN-DC and NE-DC? |
| Ericsson | Disagree? | Our understanding of the RAN1 wording (shown on the cover page of the CR) the UE will assume type A, if not configured. So unless we have misunderstood, the current spec seem to work? |
| Huawei, HiSilicon | Agree with the intention, but a CR may not be needed | We tend to believe that the current field description is clear to indicate how the NW configures this parameters, i.e. NW use the different value to indicate whether UE follows rep type A or B. so it seems not necessary to duplicate the description with the exactly same intention.…indicates whether UE follows the behavior for "PUSCH repetition type A" or the behavior for "PUSCH repetition type B" for the PUSCH scheduled by DCI format 0\_1/0\_2 and for Type 2 CG associated with the activating DCI format 0\_1/0\_2.The value *pusch-RepTypeA* enables the 'PUSCH repetition type A' and the value *pusch-RepTypeB* enables the 'PUSCH repetition type B'. |
| Apple | No strong view |  |
| Samsung | Agree |  |
| OPPO | Tend to disagree | Our understanding of the related RAN1 text is to use type A if pusch-RepTypeIndicatorDCI-0-1/pusch-RepTypeIndicatorDCI-0-2 is not configured or absent. Based on this, we think no need to change the spec. |
| CATT | No strong view |  |
| MediaTek | No strong view |  |
| ZTE | Disagree  | According to 38214, if the field is absent, UE applies PUSCH repetition Type A procedure. |

**Question 1-2: Do companies agree to make the configuration of mappingtype-r16 and startSymbolAndLength-r16 mandatory for PUSCH repetition type A by updating the condition NotFormat01-02-Or-TypeA?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | See comments | See comments above |
| Ericsson | Agree |  |
| Huawei, HiSilicon | Agree with the intention, but a CR may not be needed | The details of TDRA table is specified in TS 38.214, and similarly to the situation in Q1-1, it seems also clear about how the NW configures mappingtype-r16 and startSymbolAndLength-r16 for rep Type A from the corresponding RAN1 spec. Given that we have put a reference to RAN1 subclause, we tend to believe it is okay to leave the spec as it is considering it is a late correction to R16. - for PUSCH scheduled by DCI format 0\_1, if *PUSCHRepTypeIndicator-ForDCIFormat0\_1* is set to '*pusch-RepTypeB*', the UE applies PUSCH repetition Type B procedure when determining the time domain resource allocation. For PUSCH scheduled by DCI format 0\_2, if *PUSCHRepTypeIndicator-ForDCIFormat0\_2* is set to '*pusch-RepTypeB*', the UE applies PUSCH repetition Type B procedure when determining the time domain resource allocation. Otherwise, the UE applies PUSCH repetition Type A procedure when determining the time domain resource allocation for PUSCH scheduled by PDCCH.- For PUSCH repetition Type A, the starting symbol *S* relative to the start of the slot, and the number of consecutive symbols *L* counting from the symbol *S* allocated for the PUSCH are determined from the start and length indicator *SLIV* of the indexed row:…- For PUSCH repetition Type B, the starting symbol *S* relative to the start of the slot, and the number of consecutive symbols *L* counting from the symbol *S* allocated for the PUSCH are provided by *startSymbol* and *length* of the indexed row of the resource allocation table, respectively.- For PUSCH repetition Type A, the PUSCH mapping type is set to Type A or Type B as defined in Clause 6.4.1.1.3 of [4, TS 38.211] as given by the indexed row. - For PUSCH repetition Type B, the PUSCH mapping type is set to Type B. |
| Apple | Agree |  |
| Samsung | Agree |  |
| OPPO | Agree |  |
| CATT | Maybe OK |  |
| MediaTek | No strong view |  |
| ZTE | Agree | The change is correct. For PUSCH repetition Type A, *mappingType-r16* and *startSymbolAndLength-r16* should be mandatory present.In addition , we agree the comments from Nokia, that is, RepTypeB has the same issue, and if we don’t accept the first change, the following change is reasonable. |

## **2.2  P-Max definition in SIB1 and dedicated signalling**

[3] [R2-2207258](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207258.zip) P-Max definition in SIB1 and dedicated signalling Nokia, Nokia Shanghai Bell CR Rel-15 38.331 15.18.0 3238 - F NR\_newRAT-Core

[4] [R2-2207259](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207259.zip) P-Max definition in SIB1 and dedicated signalling Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.9.0 3239 - A NR\_newRAT-Core

[5] [R2-2207260](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207260.zip) P-Max definition in SIB1 and dedicated signalling Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3240 - A NR\_newRAT-Core

In the above CRs, the proponent argues the RRC specification seems to incorrectly convey that the UE applies maximum power according to its power class (and any limitations due to MPR/A-MPR/P-MPR) when the p-Max parameter is absent (i.e., not configured) in dedicated signalling. However, it is the understanding of the proponent that, in the given scenario described above, the UE should first check if the p-Max field if present in SIB1 and apply it before defaulting to maximum power according to its power class (and any limitations due to MPR/A-MPR/P-MPR).

**Question 2-1: Do companies agree with the interpretation that modify the p-Max field description to also consider the SIB1 provided value before applying the maximum power according to TS38.101-1 or TS38.101-2 for the cell to?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Agree | [Proponent] If the UE does not utilize the configured UL maximum power in SIB1, in the absence of the dedicated signalling, the UE does not utilize the network restriction which may lead to UE using too high UL tx power. |
| Ericsson | Agree, but.. | Cannot the gNB omit the pMax in SIB and only send it with dedicated signalling? If so, we need corresponding wording in the SIB-field description. I.e. if the SIB is absent the UE shall check if it has received pMax with dedicated and apply that, otherwise the UE shall apply the pMax in RAN4 specs. |
| Huawei, HiSilicon | Disagree | We understand that when receiving a new dedicated signalling or an updated SIB1, the UE should replace the value of p-Max according to the latest signalling. In case the latest signalling does not provide the value, the UE uses the reference value according to 38.101. Therefore the current spec is correct and the proposed change is not backward compatible. |
| Apple | Disagree | The philosophy of p-max is that UE uses it’s power-class unless NW specifically informs otherwise. If there is dedicated signalling that does NOT have p-max, then UE does not need to apply SIB1. One can argue that UE should be provided the same SIB1 content in dedicated signalling. The NW does not know when the UE would read SIB1 to apply a particular config. We do not agree with this CR. |
| NEC | Agree | We agree with the observation on how they work. We failed to understand the logic from Huawei and Apple above.. Although we also think normally NW sends the same value as SIB1 in dedicated signalling, we could not find the text saying it should be always the case. |
| Samsung | See comments | It seems that NW needs to configure explict p-Max value to the UE via dedicated signalling in case in NW wants UE to use max power according to RAN4 but SIB1 broadcasts different p-Max value , which seems inefficient. From this perspective, we are not sure whether the interpretation is correct.  |
| OPPO | Disagree  | We think UE will be configured with either *FrequencyInfoUL* (i.e. scell) or *FrequencyInfoUL-SIB*( i.e. PCell)but not both. So if *FrequencyInfoUL* is configured but p-Max is absent, it means there is no such configuration for UE hence UE can only count on UE’s power class. |
| CATT | Disagree | we share the understanding from Huawei and we see no issue here.  |
| MediaTek | Not sure | The intention seems okay but we would need more time to check on current implementation.  |
| ZTE | Disagree  | The two parameters (i.e. *p-Max* in *FrequencyInfoUL* and *p-Max* in *FrequencyInfoUL-SIB*) should be configured as the same value, as the following description is specified in *ServingCellConfigCommon* IE:‘The IE contains parameters which a UE would typically acquire from SSB, MIB or SIBs when accessing the cell from IDLE.’ |

**Question 2-2: Do companies agree to modify the p-Max field description to also consider the SIB1 provided value before applying the maximum power according to TS38.101-1 or TS38.101-2 for the cell to?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Agree | [Proponent] If the UE does not utilize the configured UL maximum power in SIB1, in the absence of the dedicated signalling, the UE does not utilize the network restriction which may lead to UE using too high UL tx power. |
| Ericsson | Agree, but.. | Same thing as above. |
| Huawei, HiSilicon | Disagree | See above answer to 2-1. |
| Apple | Disagree |  |
| NEC | Maybe | We understand the points and it might be the case, while we are wondering if some UEs are actually implementation as observed, although it would not be valid implementation from generic rule between SIB1 and dedicated signalling (i.e. if dedicated value present, override SIB1 value. otherwise, use SIB1 value). We can go with majority. |
| Samsung | See comments | If Q2-1 is yes, then we are OK with the change. Otherwise, we prefer to not to have this change.  |
| OPPO | Disagree | Please see the answer to Question 2-1 |
| ZTE | Disagree | See above answer to Question 2-1. |

## **2.3  Correction to firstOFDMSymbolInTimeDomain**

[6] [R2-2207263](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207263.zip) Correction to firstOFDMSymbolInTimeDomain Nokia, Nokia Shanghai Bell discussion Rel-15 NR\_newRAT-Core

[7] [R2-2207264](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207264.zip) Correction to firstOFDMSymbolInTimeDomain Nokia, Nokia Shanghai Bell CR Rel-15 38.331 15.18.0 3241 - F NR\_newRAT-Core

[8] [R2-2207265](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207265.zip) Correction to firstOFDMSymbolInTimeDomain Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.9.0 3242 - A NR\_newRAT-Core

[9] [R2-2207266](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207266.zip) Correction to firstOFDMSymbolInTimeDomain Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3243 - A NR\_newRAT-Core

In the TDOC [6], the proponent argues that for the CSI-RS-ResourceMapping, the Rel-15 RRC specifications still carry on with a restriction on usage of the value 2 of *firstOFDMSymbolInTimeDomain* being only supported when DMRS TypeA uses *pos3* while pointing out that this restriction was done away with in the RAN1 meeting RAN1#AH-1801 (based on [R1-1801302](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_92/Docs/R1-1801302.zip)). As this restriction is no longer in the RAN1 specifications the RAN2 specifications require to be updated as RAN2 specifications for Rel-15 RRC is not aligned with either the Rel-15 RAN1 agreements or current RAN1 specifications for the CSI-RS parameter firstOFDMSymbolInTimeDomain. The CRs propose to remove this restriction.

**Question 3: Do companies agree to remove the restriction “Value 2 is supported only when dmrs-TypeA-Position equals pos3.” from field description of firstOFDMSymbolInTimeDomain starting from Rel-15 onwards?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Agree | [Proponent] Yes, the restriction is artificial as this is no longer a valid assumption. The RAN1 and RAN2 specifications are out of sync on this aspect. |
| Ericsson | Agree | Same view as Nokia. |
| Apple | Not sure | We tend to think that we can live with this restriction. We also need to check the UE implementations. |
| Samsung | Agree |  |
| OPPO | See comment | For Rel-17 we can fine to remove the restriction, but for R15/16 we may need time to check whether it way already implemented in the product. |
| CATT | see comments | we haven’t checked but if this is just to align with R1 spec then perhaps OK. |
| MediaTek | Not sure | Seems fine to align with RAN1 but we need to check the current implementation. One way is as OPPO suggested, we fix this only in Rel-17. |
| ZTE | Disagree  | Same views with OPPO, if we delete the restriction, R17 CR can be acceptable. |

## **2.4  Correction on the field description for highSpeedDemodFlag**

[10] [R2-2207941](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207941.zip) Correction on the field description for highSpeedDemodFlag Huawei, HiSilicon CR Rel-16 38.331 16.9.0 3329 - F NR\_HST-Core

In the above CR, the proponent argues that the Rel-17 change that was agreed to be made to the field description of highSpeedDemodFlag, i.e., the UE should check whether it supports demodulationEnhancement-r16 before applying the field must also be propagated to Rel-16. Note that the Rel-17 change was agreed in R2-2203852.

**Question 4: Do companies agree to propagate the changes for the field description of highSpeedDemodFlag based on the Rel-17 agreed version in R2-2203852 to Rel-16?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Agree | Yes, we are okay with the change |
| Ericsson | Agree |  |
| Huawei, HiSilicon | Agree | Proponent. |
| Apple | Ok |  |
| NEC | Agree | We are fine to add this to align with Rel-17 change. |
| Samsung | Agree |  |
| OPPO | Agree |  |
| CATT | Agree |  |
| MediaTek | Agree |  |
| ZTE | Agree |  |

## **2.5  NR-DC Power Control**

[11] [R2-2206918](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2206918.zip) Reply LS on power control for NR-DC (R1-2205448; contact: Nokia) RAN1 LS in Rel-17 LTE\_NR\_DC\_CA\_enh-Core To:RAN2, RAN4

Moved from 5.1.1

[12] [R2-2207550](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207550.zip) NR DC Power control Nokia, Nokia Shanghai Bell CR Rel-16 38.306 16.9.0 0770 - F LTE\_NR\_DC\_CA\_enh-Core

[13] [R2-2207551](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207551.zip) NR DC Power control Nokia, Nokia Shanghai Bell CR Rel-17 38.306 17.1.0 0771 - A LTE\_NR\_DC\_CA\_enh-Core

[14] [R2-2207552](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207552.zip) NR DC Power control Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.9.0 3280 - F LTE\_NR\_DC\_CA\_enh-Core

[15] [R2-2207553](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207553.zip) NR DC Power control Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3281 - A LTE\_NR\_DC\_CA\_enh-Core

[16] [R2-2207603](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207603.zip) Correction on NR-DC power control vivo CR Rel-16 38.331 16.9.0 3290 - F LTE\_NR\_DC\_CA\_enh-Core

[17] [R2-2207604](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207604.zip) Correction on NR-DC power control vivo CR Rel-16 38.306 16.9.0 0772 - F LTE\_NR\_DC\_CA\_enh-Core

[18] [R2-2207605](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207605.zip) Correction on NR-DC power control vivo CR Rel-17 38.331 17.1.0 3291 - A LTE\_NR\_DC\_CA\_enh-Core

[19] [R2-2207606](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207606.zip) Correction on NR-DC power control vivo CR Rel-17 38.306 17.1.0 0773 - A LTE\_NR\_DC\_CA\_enh-Core

[20] [R2-2207139](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207139.zip) Clarification on FR2 p-max parameters OPPO CR Rel-16 38.331 16.9.0 3220 - F LTE\_NR\_DC\_CA\_enh-Core

[21] [R2-2207140](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207140.zip) clarification on FR2 p-max parameters OPPO CR Rel-17 38.331 17.1.0 3221 - A LTE\_NR\_DC\_CA\_enh-Core

[22] [R2-2207142](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207142.zip) Clarification on powe sharing UE capability OPPO CR Rel-16 38.306 16.9.0 0760 - F LTE\_NR\_DC\_CA\_enh-Core

[23] [R2-2207143](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2208_R2_119-e/Docs/R2-2207143.zip) Clarification on powe sharing UE capability OPPO CR Rel-17 38.306 17.1.0 0761 - A LTE\_NR\_DC\_CA\_enh-Core

*Moved from 6.24.1*

First the incoming LS from RAN1 had the following request:

|  |  |
| --- | --- |
| RAN1 identified the need to update the descriptions of the NR dual-connectivity related UE capabilities as well as the 38.331 field description of *p-NR-FR2* to correctly reflect the specification support for NR dual connectivity. RAN1 requests RAN2 to modify the NR-DC power sharing mode related capabilities in TS38.306 (and potentially in TR38.822) as follows:* For capabilities *intraFR-NR-DC-PwrSharingMode1-r16*, *intraFR-NR-DC-PwrSharingMode2-r16* and *intraFR-NR-DC-DynamicPwrSharing-r16* (FGs 18-1/1a/1b):
	+ In case MCG and/or SCG have cells in different frequency ranges, this FG indicates the capability of the power sharing only between those MCG and SCG cells with UL in FR1.
* Note: above clarification for FG18-1/1a/1b does not mean that Rel-16 Ues are mandated to support power sharing mechanisms like FG18-1/1a/1b for FR2-FR2 DC.

RAN1 also requests RAN2 to add a note to the *p-NR-FR2* field description as follows:

|  |
| --- |
| ***p-NR-FR2***The maximum total transmit power to be used by the UE in this NR cell group across all serving cells in frequency range 2 (FR2). The maximum transmit power that the UE may use may be additionally limited by *p-Max* (configured in *FrequencyInfoUL*) and by *p-UE-FR2* (configured total for all serving cells operating on FR2). This field is only used in NR-DC. UE does not expect to be configured with this parameter in this release of the specification. |

 |

From rapporteur perspective, the proponents have both considered the RAN1 request in spirit though the changes in the CRs are somewhat worded differently. For example, CRs from Nokia state the restriction that the power sharing for the affected capabilities is only pertaining to UL FR1 whereas the CRs from ViVo go a bit further to state that the UEs are not mandated to support the capabilities for intra-FR2 NR DC.

**Question 5-1: Do companies agree to clarify that if MCG and SCG have cells in different frequency ranges, the field description for the capabilities mentioned by RAN1 LS indicates UE supports the power sharing only between MCG and SCG cells with UL in FR1? And do you agree to update field description of *p-NR-FR2* as requested by RAN1?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Agree | [Proponent] Yes, this seems the basic essence of the RAN1 LS |
| Huawei, HiSilicon | Agree | The CRs in [12]-[15] are preferred as we think they reflect the agreements more precisely. |
| Apple | Same view as Huawei |  |
| NEC | Agree | agree with Huawei |
| Samsung | Agree |  |
| OPPO | Not exactly for 1st question in the sentence and agree with 2nd question | There is no NR-DC between FR2 and basically there are 3 kinds of NR-DC supported so far:Case 1, MCG(FR1)+SCG(FR1)Case 2, MCG(FR1+FR2)+SCG(FR1)Case 3, MCG(FR1)+SCG(FR1+FR2)The condition “In case MCG and/or SCG have cells in different frequency ranges” covers case 2 and case 3, but not case 1. But we think the concerned 3 UE capability parameters are also applicable for case 1 naturally. It means the mentioned condition should not be captured explicitly in the CR.In addition both [16] and [20] further propose the same change for ***p-NR-FR2*** is also applicable for ***p-UE-FR2* .** we’d better check whether this is agreeable. As proponent of [20][21] we think it is already indicated by RAN4’LS R4-2206566.  |
| CATT | Yes | Agree to follow R1 request. |
| MediaTek | Agree with comment | The wording from R1 LS is not common usage in 38.331. We prefer the wording from Vivo CR R2-2207603.In addition, we support to use Vivo CR as baseline to cover more FR2 related fields in 38.331. |
| ZTE | Agree |  |

**Question 5-2: Do companies further agree to additionally clarify in the field description (based on [16]- [19]) that UEs are not mandated to support the indicated power sharing mechanisms for FR2-FR2 DC?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Neutral | We are okay to follow the majority view here |
| Huawei, HiSilicon | Disagree | We are not sure whether we really need to change every field description, actually as long as the parameters sent via radio interface are disabled, there would be no inter-operability issue and therefore we think Nokia’s modification could already be sufficient.Regarding the statement of not mandated to support the indicated power sharing mechanism, we don’t think this is a useful statement. The NW anyway cannot configure such parameters if it is unclear whether the UE supports it or not. |
| Apple | Agree |  |
| NEC | Neutral | Probably the additional clarification is not necessary, but we can go with majority |
| Samsung | Agree |  |
| OPPO | No | Not really needed since there is no such FR2-FR2 DC in RAN4 so far. |
| CATT | maybe OK | if we understand correctly the ‘additional’ clarification in these CRs are somehow inline with the R1 LS’s request, i.e., “UE does not expect to be configured with this parameter in this release of the specification.” So maybe OK.  |
| MediaTek | No strong view | We assume that the discussion is whether to have the description “this does not mean that UEs are mandated to support for intra-FR2 NR DC” in UE capability description. We are fine to have this but no strong view. |
| ZTE | Neutral | Follow the majority. |

The rapporteur also notes that the CRs in [20] and [21] implement the change which is already included in the CRs provided by ViVo in [16]- [19] as well as provided by Nokia in [15]- [18]. Additionally, the changes proposed by [22] and [23] to clarify FRx differentiation are reasonable.

 **Question 5-3: Do companies further agree to restrict the FRx differentiation to FR1 only based on [22] and [23]?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Agree | Yes, this seems to be needed |
| Huawei, HiSilicon | See comments | We actually think the change in [15]-[18] is a more accurate description. We are not in favour of changing the column of FRX differentiation to FR1 only, this may lead to the confusion that the band combination itself can only contain FR1 bands, however the case of band combination including both FR1 and FR2 bands should also be considered, in which case the UE only applies the power sharing for the FR1 bands within this band combination. |
| NEC | Agree |  |
| Samsung | Agree |  |
| OPPO | Agree | proponent |
| CATT | agree |  |
| MediaTek | Agree | But no strong view |
| ZTE | Agree |  |

# Conclusion

**To be added later.**