**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*

#  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?**

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| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Agree | Yes, we are okay with the change but shouldn’t the CR also impact (NG)EN-DC and NE-DC? |
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**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?**

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| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Agree | Yes, we are okay with the change |
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## **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?**

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| --- | --- | --- |
| **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. |
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**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?**

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| **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. |
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## **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?**

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| **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. |
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## **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?**

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| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Agree | Yes, we are okay with the change |
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## **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:

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| 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:

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| ***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. |

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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?**

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| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Agree | [Proponent] Yes, this seems the basic essence of the RAN1 LS |
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**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?**

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| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Neutral | We are okay to follow the majority view here |
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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]?**

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| **Company** | **Agree/Disagree** | **Additional comments** |
| Nokia | Agree | Yes, this seems to be needed |
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# Conclusion

**To be added later.**

# References

[1] R4-2210611 Reply LS on measurement gap enhancements for NTN

[2] R4-2211189 Rel-17 RAN4 UE feature list for NR CMCC