**3GPP TSG-RAN WG2 Meeting #115-e R2-210xxxx**

**Online, Aug 16th – 27th, 2021**

**Agenda Item: 6.1.4.3**

**Source: Huawei, HiSilicon**

**Title: Summary of [AT115-e][028][NR16] UE capabilities I**

**Document for: Discussion and decision**

# Introduction

This document summarizes the following offline discussion.

* [AT115-e][028][NR16] UE capabilities I (Huawei)

 Scope: Determine agreeable parts and agree CRs, Treat R2-2108480, R2-2107342, R2-2108641, R2-2108468, R2-2108585, R2-2108586, R2-2108651, R2-2106952, R2-2108618, R2-2108619, R2-2108735, R2-2108736

 Intended outcome: Report, Agreed CRs.

 Deadline: Schedule 1

# Contact from companies

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# Discussion

## Part 1: Intended to determine agreeable parts

### **Misc Corrections**

[R2-2108480](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108480.zip) Miscellaneous corrections to UE capability descriptions Lenovo, Motorola Mobility CR Rel-16 38.306 16.5.0 0626 - F NR\_unlic-Core, TEI16

The proposed changes in above CR include:

1. offsetSRS-CB-PUSCH-PDCCH-MonitorAnyOccWithGap-fr1-r16: The description of the conditional support of pdcch-MonitoringAnyOccasions with value withDCI-Gap (FG 3-5a) has been added.

2. searchSpaceSetGroupSwitchingwWithDCI-r16: The capability name has been replaced by searchSpaceSwitchWithDCI-r16.

3. extendedSearchSpaceSwitchWithDCI-r16: It has been clarified that UE indicating support of this feature shall indicate support of searchSpaceSwitchWithDCI-r16.

4. Number of editorial issues have been fixed (missing suffices, misalignment of parameter names with TS 38.331 etc.).

**Q1 Do companies agree with the intention of the CR above?**

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| **Company** | **Yes or No** | **Comments** |
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### **DAPS**

[R2-2107342](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2107342.zip) Correction on the capability field DiffSCS-DAPS Huawei, HiSilicon discussion Rel-16 NR\_Mob\_enh-Core

[R2-2108641](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108641.zip) Correction on the capability field DiffSCS-DAPS Huawei, HiSilicon CR Rel-16 38.306 16.5.0 0636 - F NR\_Mob\_enh-Core

The proposal in above discussion paper is listed below. The above CR includes the corresponding change.

Proposal 1: for the two capability fields, i.e. intraFreqDiffSCS-DAPS-r16 and interFreqDiffSCS-DAPS-r16, add clarification that “In this release the UE shall not report this UE capability”.

**Q2 Do companies agree with the intention of Proposal 1 and CR above?**

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| **Company** | **Yes or No** | **Comments** |
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### **eMIMO**

[R2-2108468](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108468.zip) Correction to ul-FullPwrMode capability Sequans Communications CR Rel-16 38.306 16.5.0 0625 - F NR\_eMIMO-Core

The proposed change in above CR includes: removing the misleading reference “fullpower as specified in clause 6.1.1.1 of TS.38.214 [12]” for *ul-FullPwrMode-r16*.

**Q3 Do companies agree with the intention of the CR above?**

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| **Company** | **Yes or No** | **Comments** |
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### **IIOT**

[R2-2108585](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108585.zip) Correction on PDCCH Blind Detection in CA Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2781 - F NR\_IIOT-Core

[R2-2108586](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108586.zip) Correction on PDCCH Blind Detection in CA Huawei, HiSilicon CR Rel-16 38.306 16.5.0 0634 - F NR\_IIOT-Core

The proposed changes in above CRs include: To allow UE to report more than one combinations of pdcch-BlindDetectionCA1-r16 capability and pdcch-BlindDetectionCA2-r16 capability, add a list of elements of SEQUENCE type except for *pdcch-BlindDetectionCA-Mixed-r16* IE and *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r16* IE.

**Q4 Do companies agree with the intention of the CRs above?**

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| **Company** | **Yes or No** | **Comments** |
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### **UL Skipping**

[R2-2108651](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108651.zip) FR1FR2 differentiation for enhanced UL grant skipping capabilities Qualcomm Incorporated, Nokia, Nokia Shanghai Bell discussion Rel-16 TEI16

The proposal in above discussion paper is listed below. The above CR includes the corresponding change.

Proposal 1: RAN2 to discuss and decide on an approach to modify the current specification to allow FR differentiation

Proposal 2: RAN2 to introduce a new capability IE to allow frequency range differentiation. 2 options are proposed:

• Option-A: new capability is defined per nr-bands, to allow full flexibility for the UE to indicate the supported duplex mode and frequency range combination.

• Option-B: new TDD only capability with frequency range differentiation. Both, current and new IE may be used by the UE to convey its capability to the network.

Proposal 3: to have one of the proposed changes in section 4 &5 or 6&7 agreed.

**Q5 Do companies agree to modify the current specification to allow FR differentiation for *enhancedSkipUplinkTxConfigured-r16* and *enhancedSkipUplinkTxDynamic-r16*? If yes, which option above do companies prefer?**

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| **Company** | **Yes or No** | **Option-A or B?** | **Comments** |
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### **UL TX Switching**

[R2-2106952](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2106952.zip) LS on UL MIMO coherence for Tx switching between two carriers (R4-2107765; contact: China Telecom) RAN4 LS in Rel-16 NR\_RF\_FR1-Core To:RAN2, RAN1

[R2-2108618](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108618.zip) Adding UE capability of UL MIMO coherence for UL Tx switching Huawei, HiSilicon, China Telecom, Apple CR Rel-16 38.306 16.5.0 0635 - F NR\_RF\_FR1-Core

[R2-2108619](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108619.zip) Adding UE capability of UL MIMO coherence for UL Tx switching Huawei, HiSilicon, China Telecom, Apple CR Rel-16 38.331 16.5.0 2786 - F NR\_RF\_FR1-Core

[R2-2108735](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108735.zip) Introducing UL MIMO coherence capability for Tx switching ZTE Corporation, Sanechips CR Rel-16 38.306 16.5.0 0638 - F NR\_RF\_FR1-Core

[R2-2108736](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108736.zip) Introducing UL MIMO coherence capability for Tx switching ZTE Corporation, Sanechips CR Rel-16 38.331 16.5.0 2796 - F NR\_RF\_FR1-Core

The intention of CRs in [9][10] and [11][12] is the same, i.e. adding new per-BC capability *uplinkTxSwitching-PUSCH-TransCoherence-r16* based on LS R2-2106952. The main difference between CRs in [9][10] and [11][12] is the value of *uplinkTxSwitching-PUSCH-TransCoherence-r16*.

**Q6-1 Do companies agree with the intention of the CRs above, i.e. adding a new per-BC UE capability *uplinkTxSwitching-PUSCH-TransCoherence-r16*?**

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| **Company** | **Yes or No** | **Comments** |
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Option 1: The value set is: ENUMERATED {nonCoherent, partialCoherent, fullCoherent}

Option 2: The value set is: ENUMERATED {nonCoherent, coherent}

**Q6-2 if the answer for Q6-1 is yes, which option above do companies prefer?**

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| **Company** | **Option1 or 2?** | **Comments** |
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# Conclusions

*To be added…*

# References

1. R2-2108480 Miscellaneous corrections to UE capability descriptions Lenovo, Motorola Mobility CR Rel-16 38.306 16.5.0 0626 - F NR\_unlic-Core, TEI16
2. R2-2107342 Correction on the capability field DiffSCS-DAPS Huawei, HiSilicon discussion Rel-16 NR\_Mob\_enh-Core
3. R2-2108641 Correction on the capability field DiffSCS-DAPS Huawei, HiSilicon CR Rel-16 38.306 16.5.0 0636 - F NR\_Mob\_enh-Core
4. R2-2108468 Correction to ul-FullPwrMode capability Sequans Communications CR Rel-16 38.306 16.5.0 0625 - F NR\_eMIMO-Core
5. R2-2108585 Correction on PDCCH Blind Detection in CA Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2781 - F NR\_IIOT-Core
6. R2-2108586 Correction on PDCCH Blind Detection in CA Huawei, HiSilicon CR Rel-16 38.306 16.5.0 0634 - F NR\_IIOT-Core
7. R2-2108651 FR1FR2 differentiation for enhanced UL grant skipping capabilities Qualcomm Incorporated, Nokia, Nokia Shanghai Bell discussion Rel-16 TEI16
8. R2-2106952 LS on UL MIMO coherence for Tx switching between two carriers (R4-2107765; contact: China Telecom) RAN4 LS in Rel-16 NR\_RF\_FR1-Core To:RAN2, RAN1
9. R2-2108618 Adding UE capability of UL MIMO coherence for UL Tx switching Huawei, HiSilicon, China Telecom, Apple CR Rel-16 38.306 16.5.0 0635 - F NR\_RF\_FR1-Core
10. R2-2108619 Adding UE capability of UL MIMO coherence for UL Tx switching Huawei, HiSilicon, China Telecom, Apple CR Rel-16 38.331 16.5.0 2786 - F NR\_RF\_FR1-Core
11. R2-2108735 Introducing UL MIMO coherence capability for Tx switching ZTE Corporation, Sanechips CR Rel-16 38.306 16.5.0 0638 - F NR\_RF\_FR1-Core
12. R2-2108736 Introducing UL MIMO coherence capability for Tx switching ZTE Corporation, Sanechips CR Rel-16 38.331 16.5.0 2796 - F NR\_RF\_FR1-Core