**3GPP TSG-RAN WG4 Meeting # 102-e R4-2207147**

Electronic Meeting, February 21 – March 3, 2022

**Agenda item:** 4.1.8.1, 4.1.8.2, 4.2.4.1, 5.1.1.4, 5.1.2.2, 5.1.5.4.1, 5.1.5.4.2, 6.2.4

**Source:** Moderator (Apple)

**Title:** Email discussion summary for [102-e][317] Demod\_Maintenance\_UE

**Document for:** Information

# Introduction

In this email thread for UE Demod Maintenance, the following topics will be covered:

1. Rel-15 NR and LTE UE Demodulation and CSI requirements maintenance (4.1.8.1, 4.1.8.2, 4.2.4.1)
2. Rel-16 NR UE Demodulation and CSI requirements maintenance (5.1.1.4, 5.1.2.2, 5.1.5.4.1, 5.1.5.4.2, 6.2.4)

# Topic #1: Rel-15 NR and LTE UE Demodulation and CSI requirements maintenance

## Companies’ contributions summary

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| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| **NR** | | |
| [**R4-2205100**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205100.zip) | Ericsson | **draft CR: Correction of TBS for CQI reporting tests**  TBS changed from 14343 to 14344 in CSI RMC Table A.4-1 |
| R4-2205101 | Ericsson | draft CR: Correction of TBS for CQI reporting tests  Cat-A CR |
| R4-2205102 | Ericsson | draft CR: Correction of TBS for CQI reporting tests  Cat-A CR |
| [**R4-2205779**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205779.zip) | Huawei,HiSilicon | **CR:Updates to test setup for PDSCH and PDCCH requirements in TS 38.101-4 (Rel-15)**   1. Change the antenna configuarion from 4x4 to 2x4 in Table 5.2.3.1.2-3. 2. Add the clarification of PDCCH DMRS mapping type in Table 5.3.1 and Table 7.3.1 3. Add the row index according to the agreed simulation assumptions to the common parameters table for PDSCH demodulation requirments. |
| R4-2205780 | Huawei,HiSilicon | CR:Updates to test setup for PDSCH and PDCCH requirements in TS 38.101-4 (Rel-16)  Cat-A CR |
| R4-2205781 | Huawei,HiSilicon | CR:Updates to test setup for PDSCH and PDCCH requirements in TS 38.101-4 (Rel-17)  Cat-A CR |
| [**R4-2205782**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205782.zip) | Huawei,HiSilicon | **CR:Updates to test setup for CSI requirements in TS 38.101-4 (Rel-15)**  Change the antenna configuration from 8x4 to 4x4 for 4TX PMI reporting test in FDD |
| R4-2205783 | Huawei,HiSilicon | CR:Updates to test setup for CSI requirements in TS 38.101-4 (Rel-16)  Cat-A CR |
| R4-2205784 | Huawei,HiSilicon | 1. CR:Updates to test setup for CSI requirements in TS 38.101-4 (Rel-17) 2. Cat-A CR |
| **LTE** | | |
| [**R4-2203617**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2203617.zip) | Rohde & Schwarz | **Correction to Cat1bis RMCs**  Update Note 4 to add R.86 in Table A.3.4.3.2-1: Fixed Reference Channel for CDM-multiplexed DM RS |
| R4-2203618 | Rohde & Schwarz | Correction to Cat1bis RMCs  Cat-A CR |
| R4-2203619 | Rohde & Schwarz | Correction to Cat1bis RMCs  Cat-A CR |
| R4-2203620 | Rohde & Schwarz | Correction to Cat1bis RMCs  Cat-A CR |
| [**R4-2205785**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205785.zip) | Huawei,HiSilicon | **CR: Updates to NPDSCH repetition number for LTE NPDSCH requirements with multi-TB interleaved transmission (Rel-16)**  Change the repetition number from 1 to 32 in Table 8.12.1.1.4-2  Moderator: TDoc reserved as discussion paper not draftCR |
| R4-2205786 | Huawei,HiSilicon | CR: Updates to NPDSCH repetition number for LTE NPDSCH requirements with multi-TB interleaved transmission (Rel-17)  Cat-A CR |

## Open issues summary

None

## Companies views’ collection for 1st round

### Open issues

None

### CRs/TPs comments collection

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| **CR/TP number** | **Comments collection** |
| R4-2205100 (Ericsson) | Apple: Okay with the change |
| Anritsu: Confirmed the value matched with our calculation. |
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| R4-2205779 (Huawei) | Qualcomm: Can Huawei further explain why Change #2 for PDCCH DMRS mapping is needed? It doesn’t seem to provide any new information. Also, please correct the row indices in the reason for change # 3 in CR cover sheet. |
| Apple: Same question as Qualcomm. Not sure why the PDCCH DMRS mapping is needed. |
| Anritsu: Regarding Change #2, may I suggest simply specifying the reference of TS38.211 cl.7.4.1.3 in Table 5.3-1 and Table 7.3-1? Like “As defined in TS 38.211 7.4.1.3 [9].”  Also typo can be seen with the spec number on the coversheet. (Now shown as 38.104 instead of 38.101-4) |
| Huawei: @Qualcomm, Apple and Anritsu. Tanks for the comments.  Based on the descrption in clause 7.4.1.3 in TS 38.211, PDCCH DMRS resource allocation depends on the precoder granularity. The current paramters table only provide precoder granularity of 2TX. Therefore, the it is not clear how to map PDCCH DMRS for 1TX. In order to make it more clear, we propose to add a separate parameter such as PDCCH DMRS mapping to clarify it.      As for other comments, we will correct it and revised version is needed.  Moreover, we just find that the brackets for requirements of PDSCH Mapping Type B and UE processing capability 2 in Table 5.2.2.1.7-3 and Table 5.2.3.1.7-3 are still existing. We propose to remove it in this CR. |
| Intel: Thanks to HW for the detailed clarification. As for PDCCH DMRS mapping, it will be clearer to just say that precoder granularity is configured equal to sameAsREG-bundle for all scenarios. |
| R4-2205782 (Huawei) | Qualcomm: Thank you for providing this CR. Can you please also correct (N1,N2) to (2,1)? |
| Apple: The table 6.3.3.2.1-1seems to be repeated. Suggest to delete the first table as it seems to be for FDD. The parameters in the 2nd part seem to be all correct. We can keep that part of the table without further revisions. |
| Anritsu: Typo with the spec number on the coversheet. (Now shown as 38.104 instead of 38.101-4.) |
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| R4-2203617 (R&S) | Apple: Okay with the change |
| Company B: |
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| R4-2205785 (Huawei) | Moderator: TDoc reserved as discussion paper not draft CR |
| Huawei: Thanks for your correction. Maybe revised Tdoc number is needed in the 2nd round. |
| Qualcomm: Can Huawei provide the tdoc reference for the agreed simulation assumptions? |
| Huawei: @Qualcomm: Please refer to R4-2008759 |

## Summary for 1st round

### Open issues

*None*

### CRs/TPs

Captured in section 3.1.

## Discussion on 2nd round

### CRs/TPs comments collection

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| **CR/TP number** | **Comments collection** |
| R4-2205779 (Huawei) |  |
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| R4-2205782 (Huawei) |  |
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| R4-2205785 (Huawei) | <Revised for document type> |
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# Topic #2: Rel-16 NR UE Demodulation and CSI requirements maintenance

## Companies’ contributions summary

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| **TDoc#** | **Company** | **Proposals / Observations** |
| **NR-U** | | |
| [**R4-2205957**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205957.zip) | Apple | **Editorial CR for NR-U demod requiremetns for 2RX**  Moved 5.2.2.2.15 under 5.2.2.2 from 5.2.2.1 |
| [**R4-2205911**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205911.zip) | MediaTek inc. | **Draft CR to TS38.101-4, Correction the misalignment for subsection 5.2.2.2.15 in Rel-16 and Rel-17**  1) Place the subsetction 5.2.2.2.15 under section 5.2.2.2 |
| **eMIMO** | | |
| [**R4-2205909**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205909.zip) | MediaTek inc. | **Draft CR to TS38.101-4, Correction to reference channels for PDSCH requirements with single-DCI based FDM Scheme A (Rel-16)**   1. Remove the redundant ‘space’ for for refrence channel R.PDSCH.1-2.6 FDD, R.PDSCH.2-2.6 TDD, R.PDSCH.1-2.6 FDD, R.PDSCH.2-1.3 TDD, R.PDSCH.2-2.6 TDD 2. Modify some values for R.PDSCH.1-2.5 FDD in Table A.3.2.1.1 3. Fix the typo for “tapped delay line” |
| R4-2205910 | MediaTek inc. | Draft CR to TS38.101-4, Correction to reference channels for PDSCH requirements with single-DCI based FDM Scheme A (Rel-17)  Cat-A CR |
| [**R4-2205746**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205746.zip) | Huawei,HiSilicon | **Draft CR on correction to eMIMO FRC (TS38.101-4, Rel-16)**  For FRC correction, update Table A.3.2.1.1-2.  Moderator: TDoc reserved as discussion paper not draftCR |
| R4-2205747 | Huawei,HiSilicon | Draft CR on correction to eMIMO FRC (TS38.101-4, Rel-17)  Cat-A CR  Moderator: TDoc reserved as discussion paper not draftCR |
| **PDSCH CA** | | |
| [**R4-2205572**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205572.zip) | China Telecom | **Draft CR on removing square brakets for CA demodulation test requirements (Rel-16)**  Remove the square brakets on all the CA demodulation test requirements for FR1 and FR2 tests. |
| R4-2205573 | China Telecom | Draft CR on removing square brakets for CA demodulation test requirements (Rel-17)  Cat-A CR |
| [**R4-2205740**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205740.zip) | Huawei,HiSilicon | **Draft CR on correction to test applicability reference for CA performance requirements (TS38.101-4, Rel-16)**  There is wrong reference to the applicability rule for normal CA performance requirements. For correcting clause reference, update clause 5.2A.2.1 and 5.2A.3.1.  Moderator: TDoc reserved as discussion paper not draftCR |
| R4-2205741 | Huawei,HiSilicon | Draft CR on correction to test applicability reference for CA performance requirements (TS38.101-4, Rel-17)  Cat-A CR  Moderator: TDoc reserved as discussion paper not draftCR |
| [**R4-2206118**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2206118.zip) | Qualcomm Incorporated | **Draft CR on PDSCH CA requirements**  [] are removed for FR1 4Rx CA and FR2 CA PDSCH requirements. |
| R4-2206122 | Qualcomm Incorporated | Draft CR on PDSCH CA requirements  Cat-A CR |
| **HST-DPS** | | |
| [**R4-2205742**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205742.zip) | Huawei,HiSilicon | **Draft CR on update on HST DPS channel model (38.101-4, Rel16)**  For channel model correction, update clause B.3.3.  Moderator: TDoc reserved as discussion paper not draftCR |
| R4-2205743 | Huawei,HiSilicon | Draft CR on update on HST DPS channel model (38.101-4, Rel17)  Cat-A CR  Moderator: TDoc reserved as discussion paper not draftCR |
| [**R4-2206124**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2206124.zip) | Qualcomm Incorporated | **Draft CR on corrections for HST DPS channel model**  Corrected the visibility of RRH and clarified the purpose of two figures in Doppler shift figures. |
| R4-2206128 | Qualcomm Incorporated | Draft CR on corrections for HST DPS channel model  Cat-A CR |
| **UE PS** | | |
| [**R4-2205744**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205744.zip) | Huawei,HiSilicon | **Draft CR on updating to power saving requirements (TS38.101-4, Rel-16)**  For removing square brackets, update clause 5.3.2.1.3 – UE power saving requiremetns.  Moderator: TDoc reserved as discussion paper not draftCR |
| R4-2205745 | Huawei,HiSilicon | Draft CR on updating to power saving requirements (TS38.101-4, Rel-17)  Cat-A CR  Moderator: TDoc reserved as discussion paper not draftCR |

## Open issues summary

None

## Companies’ views collection for 1st round

### Open issues

None

### CRs/TPs comments collection

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| **CR/TP number** | **Comments collection** |
| **NR-U** | |
| R4-2205957 (Apple) | Company A: |
| Company B: |
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| R4-2205911 (MediaTek) | Qualcomm: It has same correction as in R4-2205957. We suggest to merge this with R4-2205957. Also, “Clauses Affected” section in CR cover sheet is incorrect. |
| Apple: Can it be merged with our CR (R4-2205957)? |
| MediaTek: Thanks for the correction from QC. We are OK to be merged with Apple’s CR (R4-2205957). |
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| **eMIMO** | |
| R4-2205909 (MediaTek) | Apple: Okay with changes. |
| Company B: |
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| R4-2205746 (Huawei) | Moderator: TDoc reserved as discussion paper not draft CR |
| Huawei: Thanks for your correction. Maybe revised Tdoc number is needed in the 2nd round. |
| Ericsson: The correction is included in R4-2205909. We propose to merge to R4-2205909. |
| Qualcomm: We have same comments as Ericsson and prefer to merge it with R4-2205909. |
|  | Apple: Same comments as Ericsson and Qualcomm.  Huawei: Fine for us. |
| **PDSCH CA** | |
| R4-2205572 (China Telecom) | Apple: We suggest to merge some changes in R4-2205740 into this CR. Note 1 in minimum performance tables. |
| Company B: |
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| R4-2205740 (Huawei) | Moderator: TDoc reserved as discussion paper not draft CR |
| Huawei: Thanks for your correction. Maybe revised Tdoc number is needed in the 2nd round. |
| Ericsson: Correction is ok. We suggest to merge to R4-2205572 because of the same correcion. |
| Qualcomm: Same comment as Ericsson.  Apple: Can be merged with R4-2205572.  Huawei: R4-2205740 is NOT related to same part with R4-2205572 or R4-2206118.   * R4-2205572 (China Telecom): Removing square brackets (Section 5 and 7). * R4-2205740 (Huawei): Correction wrong reference. * R4-2206118 (Qualcomm): Removing square brackets (Section 5).   We think it is berrer to merge R4-2206118 into R4-2205572, but R4-2205740 has different updated contents. It is reasonable to agree this CR directly to avoid any unnecessary merge work. |
| R4-2206118 (Qualcomm) | Ericsson: Correction is ok. We suggest to merge to R4-2205572 because of the same correcion. |
| Qualcomm: We are ok with Ericsson’s suggestion. |
| Apple: Can be merged with R4-2205572. |
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| **HST-DPS** | |
| R4-2205742 (Huawei) | Moderator: TDoc reserved as discussion paper not draft CR |
| Huawei: Thanks for your correction. Maybe revised Tdoc number is needed in the 2nd round. |
| Ericsson: Correction is ok. We suggest to merge to R4-2206124 because of the same correcion. |
| Qualcomm: Same comment as Ericsson.  Apple: Same comments as Ericsson and Qualcomm.  Huawei: Fine for us. |
| R4-2206124 (Qualcomm) | Apple: Ok with change. |
| Intel: Based on R4-2109206, it was agreed to remove the bottom figures of Figures B.3.3-2 and B.3.3-3, but for some reason they were not remove from the specification. We suggest to include the removing of these figures in this CR and remove the sentences about top and bottom figures. |
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| **UE PS** | |
| R4-2205744 (Huawei) | Moderator: TDoc reserved as discussion paper not draft CR |
| Huawei: Thanks for your correction. Maybe revised Tdoc number is needed in the 2nd round. |
| Company B: |
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## Summary for 1st round

### Open issues

*None*

### CRs/TPs

Captured in section 3.1.

## Discussion on 2nd round

### CRs/TPs comments collection

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| **CR/TP number** | **Comments collection** |
| **PDSCH CA** | |
| R4-2205740 (Huawei) | <Revised for document type> |
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| **HST-DPS** | |
| R4-2206124 (Qualcomm) |  |
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| **UE PS** | |
| R4-2205744 (Huawei) | <Revised for document type> |

# Recommendations for Tdocs

## 1st round

**New tdocs**

**Existing tdocs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **T-doc number** | **Source** | **Title** | **Recommendation** | **Comments** |
| **Rel-15 NR** | | |  |  |
| R4-2205100 | Ericsson | draft CR: Correction of TBS for CQI reporting tests | Agreeable |  |
| R4-2205779 | Huawei,HiSilicon | CR:Updates to test setup for PDSCH and PDCCH requirements in TS 38.101-4 (Rel-15) | Revised |  |
| R4-2205782 | Huawei,HiSilicon | CR:Updates to test setup for CSI requirements in TS 38.101-4 (Rel-15) | Revised |  |
| **LTE** | | |  |  |
| R4-2203617 | Rohde & Schwarz | Correction to Cat1bis RMCs | Agreeable |  |
| R4-2205785 | Huawei,HiSilicon | CR: Updates to NPDSCH repetition number for LTE NPDSCH requirements with multi-TB interleaved transmission (Rel-16) | Revised | Content agreeable. TDoc reserved as discussion paper not draftCR |

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| **NR-U** | | |  |  |
| R4-2205957 | Apple | Editorial CR for NR-U demod requiremetns for 2RX | Agreeable |  |
| R4-2205911 | MediaTek inc. | Draft CR to TS38.101-4, Correction the misalignment for subsection 5.2.2.2.15 in Rel-16 and Rel-17 | Merged |  |
| **eMIMO** | | |  |  |
| [R4-2205909](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205909.zip) | MediaTek inc. | Draft CR to TS38.101-4, Correction to reference channels for PDSCH requirements with single-DCI based FDM Scheme A (Rel-16) | Agreeable |  |
| [R4-2205746](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205746.zip) | Huawei,HiSilicon | Draft CR on correction to eMIMO FRC (TS38.101-4, Rel-16) | Merged |  |
| **PDSCH CA** | | |  |  |
| R4-2205572 | China Telecom | Draft CR on removing square brakets for CA demodulation test requirements (Rel-16) | Agreeable |  |
| R4-2205740 | Huawei,HiSilicon | Draft CR on correction to test applicability reference for CA performance requirements (TS38.101-4, Rel-16) | Revised | Content agreeable. TDoc reserved as discussion paper not draftCR |
| R4-2206118 | Qualcomm Incorporated | Draft CR on PDSCH CA requirements | Merged |  |
| **HST-DPS** | | |  |  |
| R4-2205742 | Huawei,HiSilicon | Draft CR on update on HST DPS channel model (38.101-4, Rel16) | Merged |  |
| R4-2206124 | Qualcomm Incorporated | Draft CR on corrections for HST DPS channel model | Revised |  |
| **UE PS** | | |  |  |
| R4-2205744 | Huawei,HiSilicon | Draft CR on updating to power saving requirements (TS38.101-4, Rel-16) | Revised | Content agreeable. TDoc reserved as discussion paper not draftCR |

## 2nd round

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| **T-doc number** | **Source** | **Title** | **Recommendation** | **Comments** |
| **Rel-15 NR** | | |  |  |
| R4-22xxxxx revision of R4-2205779 | Huawei,HiSilicon | CR:Updates to test setup for PDSCH and PDCCH requirements in TS 38.101-4 (Rel-15) |  |  |
| R4-22xxxxx revision of R4-2205782 | Huawei,HiSilicon | CR:Updates to test setup for CSI requirements in TS 38.101-4 (Rel-15) |  |  |
| **LTE** | | |  |  |
| R4-22xxxxx revision of R4-2205785 | Huawei,HiSilicon | CR: Updates to NPDSCH repetition number for LTE NPDSCH requirements with multi-TB interleaved transmission (Rel-16) |  |  |
| **PDSCH CA** | | | | |
| R4-22xxxxx revision of R4-2205740 | Huawei,HiSilicon | Draft CR on correction to test applicability reference for CA performance requirements (TS38.101-4, Rel-16) |  |  |
| **HST-DPS** | | | | |
| R4-22xxxxx revision of R4-2206124 | Qualcomm Incorporated | Draft CR on corrections for HST DPS channel model |  |  |
| **UE PS** | | | | |
| R4-22xxxxx revision of R4-2205744 | Huawei,HiSilicon | Draft CR on updating to power saving requirements (TS38.101-4, Rel-16) |  |  |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics.
2. For the Recommendation column please include one of the following:
   1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
   2. Other documents: Agreeable, Revised, Noted
3. Do not include hyper-links in the documents

# Annex

Contact information

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Note:

1. Please add your contact information in above table once you make comments on this email thread.
2. If multiple delegates from the same company make comments on single email thread, please add you name as suffix after company name when make comments i.e. Company A (XX, XX)