3GPP TSG-RAN WG2 #111 Draft R2-2008136

Electronic meeting, 17th – 28th August 2020

**Agenda item:** 7.4.3

**Source:** China Telecom

**Title:** Summary of discussion [AT111-e][206][MOB] UE capability corrections for mobility (China Telecom)

**Document for:**  Discussion and decision

# Introduction

This is the summary of below offline discussion:

* [AT111-e][206][MOB] UE capability corrections for mobility (China Telecom)

Scope:

* + - Collect companies’ feedback for the UE capability contributions under 6.7.4 and 7.4.3 (in case Tue Aug 18th session runs out of time) marked for this email discussion
    - Proponents may provide updated versions (if needed) under this email discussion (Tdoc numbers can be requested for this purpose from the session chair or the RAN2 secretary)

Intended outcome:

* + - Discussion summary in [R2-2008136](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2008136.zip) (by email rapporteur).
    - Email discussion report treated during the 2nd online session, but session chair may propose intermediate conclusions after summary is available

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Deadline for companies' feedback: Friday 2020-08-21 09:00 UTC
    - Deadline for rapporteur's summary (in [R2-2008136](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2008136.zip)): Monday 2020-08-24 12:00 UTC
    - Deadline for CR finalization (for agreed CRs): Thursday 2020-08-27 07:00 UTC

As indicated by chairman, the following contributions [1]-[4] under AI 6.1.2, [5]-[7] under AI 6.7.4 and [8]-[11] under AI 7.4.3 are handled in this offline discussion for UE capability corrections for NR/LTE mobility.

Proposal 2, 3 and 5 handled here as per main session decisions:

1. [R2-2006936](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_111-e\Docs\R2-2006936.zip) Report of email discussion [Post109bis-e][082] UE Capabilties Intel Corporation, NTT DoCoMo discussion Rel-16 NR\_UE\_pow\_sav, NR\_IAB-Core, NR\_eMIMO-Core, NR\_IIOT-Core, NR\_2step\_RACH-Core, 5G\_V2X\_NRSL-Core, NR\_Mob\_enh-Core, NR\_pos-Core, NR\_unlic-Core, LTE\_NR\_DC\_CA\_enh-Core, NR\_SON\_MDT-Core, NR\_CLI\_RIM, NG\_RAN\_PRN-Core, TEI16, NR\_L1enh\_URLLC-Core

Miscellaneous corrections: XDD/FRX differentiation, dependent capabilities:

1. [R2-2007845](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007845.zip) Miscellaneous corrections for Rel-16 UE capabilities Samsung discussion Rel-16 NR\_Mob\_enh-Core
2. [R2-2007846](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007846.zip) Miscellaneous corrections for Rel-16 UE capabilities Samsung CR Rel-16 38.331 16.1.0 1927 - F NR\_Mob\_enh-Core
3. [R2-2007847](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007847.zip) Miscellaneous corrections for Rel-16 UE capabilities Samsung CR Rel-16 38.306 16.1.0 0394 - F NR\_Mob\_enh-Core
4. [R2-2007455](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2007455.zip) Discussion on per UE NR mobility capabilities Huawei, HiSilicon discussion Rel-16 NR\_Mob\_enh-Core
5. [R2-2007457](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2007457.zip) Correction on TS 38.306 for DAPS Huawei, HiSilicon CR Rel-16 38.306 16.1.0 0380 - F NR\_Mob\_enh-Core

Reverting previous decision on dual-quantity CHO event – only treated if time allows:

1. [R2-2007591](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2007591.zip) Multi quantity event for CHO Ericsson discussion NR\_Mob\_enh-Core

Including UE capability aspects of LTE mobility WI.

1. [R2-2006932](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2006932.zip) Correction on LTE MOB capability Intel Corporation, China Telecom, Samsung CR Rel-16 36.331 16.1.1 4362 - F LTE\_feMob-Core
2. [R2-2006933](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2006933.zip) Correction on LTE MOB capability Intel Corporation, China Telecom, Samsung CR Rel-16 36.306 16.1.0 1779 - F LTE\_feMob-Core
3. [R2-2007458](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2007458.zip) Correction on TS 36.331 for DAPS UE capabilities Huawei, HiSilicon CR Rel-16 36.331 16.1.1 4384 - F LTE\_feMob-Core
4. [R2-2007459](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2007459.zip) Correction on TS 36.306 for DAPS Huawei, HiSilicon CR Rel-16 36.306 16.1.0 1781 - F LTE\_feMob-Core

To make it easier to find the correct contact delegate in each company for potential follow-up questions, the rapporteur encourages the delegates who provide input to provide their contact information in this table Delegate contact in section 5.

# Discussion

Some DAPS-related proposals in the references would be covered by [AT111-e][206], including *Proposal#5* in [1], Proposal 1 and Proposal 2 in [2] as below.

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| [R2-2006936](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_111-e\Docs\R2-2006936.zip)[1]  *“Proposal#5: Include the following 2 RAN2 agreements on intraFreqDAPS and interFreqDAPS in the LS to RAN1 and 4:*  *4: For inter freq DAPS, the capability inter-FreqDAPS is specified per BC (for intra band, inter band cases). It is put under existing CA bandcombination, and same as CA, the CCs in the bandcombination with UL can all be source or target PCell.*  *7: Per Band per BC capability (intraBandDiffSCS, intraFreq-DAPS) is put in BandParameters.”* |

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| [R2-2007845](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007845.zip)[2]  “Proposal 1: Remove intraFreqDAPS-Parameters-r16 from BandParameters-v1610 and add intraFreqDAPS-Parameters-r16 in the BandNR.  Proposal 2: Remove intraFreqDAPS-r16 from the intraFreqDAPS-Parameters-r16.” |

Besides, for R2-2006936[1], *handoverIntraF-IAB-r16* ofproposal#3 has been discussed in the main session AI 6.1.2. Results of the discussion of proposal#2 and proposal#3(except *handoverIntraF-IAB-r16*) will be informed to RAN1/4 via LS (see main session discussion on R2-2006940), which means the LS will be based on the conclusion of section 2.1 and 2.2.

## CHO, CPC and T312: UE capabilities with XDD/FRX differentiation

[1] [2] [5] discussed XDD/FRX differentiation dependent UE capabilities of CHO, conditional PSCell change and T312, and corresponding CRs were provided respectively as [3][4] with [2] and [6] with [5]. The related proposals in the references are copies as below.

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| [R2-2006936](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_111-e\Docs\R2-2006936.zip)[1]  *“Proposal#2: Discuss how to handle the CHO capabilities (i.e. condHandoverFailure-r16 and condHandoverTwoTriggerEvents-r16) requiring both xDD Diff and FRx-Diff. If any change is made on CHO, the corresponding CPC capabilities need to change as well.”* |

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| [R2-2007845](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007845.zip)[2]  “Proposal 5: To define condHandoverParameters (i.e. condHandover-r16, condHandoverFailure-r16 and condHandoverTwoTriggerEvents-r16), pcellT312-r16 and interFrequencyMeas-Nogap-r16 under bandNR and remove from the current places.  Proposal 6: To define condPSCellChangeParameters (i.e. condPSCellChange-r16, condPSCellChangeTwoTriggerEvents-r16) and pscellT312-r16 under bandNR and remove from the current places.” |

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| [R2-2007455](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2007455.zip)[5]  “Proposal 1: RAN2 confirm that no FRX and XDD differentiation is needed for TwoTriggerEvents and T312 related UE capabilities.” |

Roughly, there are two ways to handle the CHO UE capabilities with XDD/FRX differentiation, conditional PSCell change and T312: to change the type to per band, or to confirm that no FRX and XDD differentiation is needed for them.

**Option1: keep FRX-Diff and XDD-Diff and change the type to per band**

**Option2: remove FRX-Diff and XDD-Diff and keep the type as per UE**

The capabilities discussed in the references are not exactly the same. So we list these capabilities separately in Q1-1.

**Q1-1: which option do companies prefer for the capabilities(option1/2)? Please fill the following table with the preferred option number and comments if any.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Company name | Preferred option for  *condHandover-r16,*  *condPSCellChange-r16* | Preferred option for  *condHandoverFailure-r16* | Preferred option for  *condHandoverTwoTriggerEvents-r16,*  *condPSCellChangeTwoTriggerEvents-r16* | Preferred option for  *pcellT312-r16,*  *pscellT312-r16* |
|  |  |  |  |  |
|  |  |  |  |  |

Based on the conclusion of Q1-1, we would figure out for the UE capabilities that are changed from per UE requiring xDD-Diff and FRx-Diff to per band, companies’ understanding of *Proposal#3* of [1].

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| [R2-2006936](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_111-e\Docs\R2-2006936.zip)[1]  *“Proposal#3: For UE capabilities that are changed from per UE requiring xDD-Diff and FRx-Diff to per band, a new condition needs to be added (i.e. UE shall set the capability value consistently for all FDD-FR1 bands, all TDD-FR1 bands and all TDD-FR2 bands respectively). This will apply to (parameters so far implemented for Rel-16 that have both xDD-DIFF and FRx-DIFF):*  *MeasAndMobParameters:*  *• condHandover-r16*  *• pcellT312-r16*  *• handoverIntraF-IAB-r16*  *MeasAndMobParametersMRDC:*  *• condPScellChange-r16*  *• pcellT312-r16”* |

The discussion on this proposal is copied from main session:

- Oppo wonder what the word “consistently” means, the new condition, think this is not needed.

- QC support the proposal, and the consistency is there already in the current agreement. Huawei has the same understanding as QC.

- Oppo wonder if this is a general principle. Intel think yes. Huawei think this is only when diff for both xDD and FRx.

- Huawei think HO capabilities are particularly complex

**Q1-2: for the per band CHO UE capabilities requiring xDD-Diff and FRx-Diff, what do companies consider on that UE shall set the capability value consistently for all FDD-FR1 bands, all TDD-FR1 bands and all TDD-FR2 bands respectively? Is the table in the Annex of R2-2006936[1] sufficient on how the FDD-FR1 bands, TDD-FR1 bands and TDD-FR2 bands work with *condHandoverFDD-TDD-r16* and *condHandoverFR1-FR2-r16*? Any comments?**

|  |  |
| --- | --- |
| **Company** | **comments** |
|  |  |
|  |  |

## CHO: monitoring of the two triggering quantities RSRP and RSRQ in one event

In RAN2#110e the following agreement was made to support two trigger events for the same execution condition:

**Agreements**

1 the CHO capable UE must support maximum 8 candidate cells;

4 the CPC capable UE must support maximum 8 candidate cells;

2 For CHO, introduce additional IOT bit (i.e. mandatory with capability) on the support of 2 trigger events for same execution condition. This feature is mandatory for UEs supporting CHO (as per definition of IOT bits).

5 For CPC, introduce additional IOT bit (i.e. mandatory with capability) on the support of 2 trigger events for same execution condition. This feature is mandatory for UEs supporting CPC (as per definition of IOT bits).

3 Introduce capability bit (e.g. cpc-r16) to indicate the support of CPC;

6 For CHO/CPC, introduce separate capabilities FDD-to-TDD (and vice versa) CHO/CPC and FR1-to-FR2 (and vice versa) CHO/CPC;

[7] proposed to support monitoring of the two triggering quantities RSRP and RSRQ in one event as part of the overall CHO UE capability, as a compromised solution to reduce complexity.

**Q2: do companies agree to support monitoring of the two triggering quantities RSRP and RSRQ in one event as part of the overall CHO UE capability?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **comments** |
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## 2.3 UE capability CRs for NR\_Mob

There are some other corrections for NR\_Mob were discussed in [2] and the corresponding changes on the specs are offered in [3][4].

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| [R2-2007845](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007845.zip)[2]  “Proposal 3: Change the type of column of “Per” for both intraFreqSemiStaticPowerSharingDAPS-Mode1-r16 and intraFreqSemiStaticPowerSharingDAPS-Mode2-r16 to the “Band” instead of “BC”.  Proposal 4: Introduce the capability for asynchronous NR-DC support under CA-ParameterNRDC-v1610..” |

**Q3: do companies agree proposal3 in R2-2007845 and corrections in R2-200846 and R2-2007847? Any comments?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/yes,but…/No** | **comments** |
|  |  |  |
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**Q4: do companies agree proposal4 in R2-2007845 and corrections in R2-200846 and R2-2007847? Any comments?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/yes,but…/No** | **comments** |
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## 2.4 UE capability CRs for LTE\_feMob

[8]-[11] are corrections on LTE MOB UE capability.

The summary of changes in [R2-2006932](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2006932.zip) [8] and [R2-2006933](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2006933.zip) [9] is:

1 Move *ul-TransCancellationDAPS-r16* from “*PhyLayerParameters*”to “*daps-Parameters-r16*

2 clarify, *multipleTimingAdvance* is mandatory for interFreqDAPS capble UE.

**Q5: Do companies agree the corrections in R2-2006932 and R2-2006933? Any comments?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/yes,but…/No** | **comments** |
|  |  |  |
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The summary of changes in [R2-2007458](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2007458.zip) [10] and [R2-2007459](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2007459.zip) [11] is:

for ***intraFreqDAPS-r16,*** add the following sentences to reflect RAN2 agreements: A UE indicating this capability shall also support synchronous DAPS handover, and single UL transmission for intra-frequency DAPS handover.

for ***interFreqDAPS-r16***, remove “syncnronous” and add the following sentences to reflect RAN2 agreements: A UE indicating this capability shall also support synchronous DAPS handover, and single UL transmission for inter-frequency DAPS handover.

For 36.306, make some editorial changes to align the descriptions.

**Q6: do companies agree the corrections in R2-2007458 and R2-2007459? Any comments?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/yes,but…/No** | **comments** |
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# Summary

# Reference

1. [R2-2006936](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_111-e\Docs\R2-2006936.zip) Report of email discussion [Post109bis-e][082] UE Capabilties Intel Corporation, NTT DoCoMo discussion Rel-16 NR\_UE\_pow\_sav, NR\_IAB-Core, NR\_eMIMO-Core, NR\_IIOT-Core, NR\_2step\_RACH-Core, 5G\_V2X\_NRSL-Core, NR\_Mob\_enh-Core, NR\_pos-Core, NR\_unlic-Core, LTE\_NR\_DC\_CA\_enh-Core, NR\_SON\_MDT-Core, NR\_CLI\_RIM, NG\_RAN\_PRN-Core, TEI16, NR\_L1enh\_URLLC-Core
2. [R2-2007845](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007845.zip) Miscellaneous corrections for Rel-16 UE capabilities Samsung discussion Rel-16 NR\_Mob\_enh-Core
3. [R2-2007846](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007846.zip) Miscellaneous corrections for Rel-16 UE capabilities Samsung CR Rel-16 38.331 16.1.0 1927 - F NR\_Mob\_enh-Core
4. [R2-2007847](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007847.zip) Miscellaneous corrections for Rel-16 UE capabilities Samsung CR Rel-16 38.306 16.1.0 0394 - F NR\_Mob\_enh-Core
5. [R2-2007455](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2007455.zip) Discussion on per UE NR mobility capabilities Huawei, HiSilicon discussion Rel-16 NR\_Mob\_enh-Core
6. [R2-2007457](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2007457.zip) Correction on TS 38.306 for DAPS Huawei, HiSilicon CR Rel-16 38.306 16.1.0 0380 - F NR\_Mob\_enh-Core
7. [R2-2007591](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2007591.zip) Multi quantity event for CHO Ericsson discussion NR\_Mob\_enh-Core
8. [R2-2006932](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2006932.zip) Correction on LTE MOB capability Intel Corporation, China Telecom, Samsung CR Rel-16 36.331 16.1.1 4362 - F LTE\_feMob-Core
9. [R2-2006933](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_111-e\R2-2006933.zip) Correction on LTE MOB capability Intel Corporation, China Telecom, Samsung CR Rel-16 36.306 16.1.0 1779 - F LTE\_feMob-Core
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# Delegate contact

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| China Telecom | Qiao Xiaoyu (qiaoxy@chinatelecom.cn) |
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