3GPP TSG RAN WG2 Meeting #109-e draftR2-200xxxx

**Electronic meeting, 24th February – 6th March, 2020**

**Agenda item:** 7.1.1

**Source:** Intel Corporation

**Title:** Open issues of running CR to 36.300 for eMTC

**Document for:**  Discussion and decision

# Introduction

This contribution addresses new/update of the stage-2 TP in the running CR to 36.300 [1] considering the R2#109-e agreements as part of the email discussion **“[AT109e][403][eMTC] Update 36.300 running CR (Intel)**”.

To reduce overlapping discussions between this email discussion [403] and “[AT109e][313][NBIOT] R16 36.300 CR (Huawei)”, we suggest not to discuss here the sections/TPs that address common features between MTC and NB-IoT as in our understanding, those are addressed on email discussion [31]; instead, this email discussion focuses on MTC specific ones.

# Discussion on RAN2#109-e agreements

1. On the sections of 36.300 that addresses common features for MTC and NB-IoT, companies are invited to provide their views on whether the related TP should also be included in this running CR or no (understanding that current version includes overlapping sections).
2. Keep current format on this running CRs which also includes overlapping TP on the features that are common for MTC and NB-IoT. If so, we suggest to only discuss them in one email discussion [313] and we would coordinate to include the updated TP from the email discussion [313]. Therefore, the TP of the following sections common for MTC and NB-IoT would be taken from email discussions [313]: section 2, 3, 7 (including 7.1, 7.2, 7.3, 7.3a, 7.3b, 7.3x, 7.3y), 8.1, 10.1.4, 15.3, 16.3, 23.13, 24.
3. Remove the description of the features that are relevant to both MTC and NB-IoT on this running CR where there is no MTC specific changes (e.g. in next discussion point 2, the common agreements between MTC and NB-IoT are shown in grey). If so, we understand that the MTC related TP that are common for NB-IoT are captured as part of email discussion [313].

From CB session on 03/04, companies preferred to follow option a), therefore, TP on common sections for MTC and NB-IoT will be updated based on the latest TP captured on the running CR of email discussion [313]. Please indicate in table below if you had different view.

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| **Company’s name** | **Option** | **Company’s view** |
| Huawei | a) | The two CRs should be self-contained as they can be approved/ postponed independently of each other.  eMTC CR should normally not include NB-IoT specific text. However, to help CR implementation, we propose to use [] for the Nb-IoT part in text which is common to both, e.g. :  XXX is only applicable to BL UEs, or UEs in enhanced coverage [and NB-IoT UEs]. the same approach is now followed in the NB-IoT CR.  [Intel] Updated version 02 includes the suggested change in the TP referring to NB-IoT (changes tracked by RAN2#109e(2)) |
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1. Companies are invited to provide their views and/or suggested TP on whether any of the following MTC specific agreements (i.e. those agreements not grey out) should be captured in this stage-2 running CR. As previous explained, this email discussion [403] suggested to only focus on non-overlapping topics/sections with the one discussed on email discussion [313]. In addition, you can also indicate in the table below if any of the grey out agreements should be considered within the scope of this email discussion [403] instead.

**Mobile-terminated (MT) early data transmission (EDT) [MTC & NB-IoT]**

1. **UE category information, i.e., Cat-M2 (Cat-NB2 for NB-IoT), is provided in the UE Radio Paging information container. FFS how the use of UE category information is captured in the specifications.**
2. **Capture in stage 2 that the eNB uses the UE category included in the S1 paging message to trigger MT-EDT for message size beyond Cat M1/NB1.**
3. **In RRC section 5.3.3.3a, for UP MT-EDT, lower layers are not configured for EDT.**
4. **In RRC section 5.3.2.3, clarify that the mt-EDT is the one included in the UE’s paging record.**

**UE-group wake-up signal (WUS) [MTC & NB-IoT]**

1. **For NB-IoT, RAN2 agree signaling changes proposed in Table 5 as the baseline.**
2. **For NB-IoT, RAN2 assume the changes proposed in Table 7, 8 and 9 as the baseline for signalling group WUS information.**
3. **For NB-IoT, RAN2 use the changes proposed in Table 10 as the baseline.**
4. **For eMTC, RAN2 agree to use the changes proposed in Table 12 as the baseline.**
5. **For eMTC, RAN2 assume the changes proposed in Table 15, 16 and 17 as the baseline for signalling group WUS information.**
6. **For eMTC and NB-IoT support the same paging probability range and granularity.**
7. **No special handling of WUS resource overlap is specified and UE use the WUS resource corresponding to its gap capability**
8. **Update stage 2 to explain group WUS in more detail using text proposed in R2-2000639 as starting point.**
9. **From RAN2 point of view paging escalation does not need to be mandated**
10. **Working assumption:** 
    1. **For NB-IoT, if only one R16 WUS resource is configured and no Release 15 WUS resource is configured then R16 WUS resource is always in primary location**
    2. **Support of Release 16 WUS is independent to support of Release 15 WUS**
    3. **Define WUS group selection based on the formula defined in R2-2001472**
11. **FFS:**
    1. **Code points for paging probability thresholds.**
    2. **Mechanism to minimize false wake-up**
12. **For eMTC and NB-IoT support the same paging probability range and granularity.**
13. **No special handling of WUS resource overlap is specified and UE use the WUS resource corresponding to its gap capability**
14. **Update stage 2 to explain group WUS in more detail using text proposed in R2-2000639 as starting point.**
15. **From RAN2 point of view paging escalation does not need to be mandated**
16. **Working assumptions**
    1. **For NB-IoT, if only one R16 WUS resource is configured and no Release 15 WUS resource is configured then R16 WUS resource is always in primary location**
    2. **Support of Release 16 WUS is independent to support of Release 15 WUS**
    3. **Define WUS group selection based on the formula defined in R2-2001472**
17. **FFS**
    1. **Code points for paging probability thresholds.**
    2. **Mechanism to minimize false wake-up**

**Transmission in preconfigured resources [MTC & NB-IoT]**

1. **PUR TA timer configuration is provided to MAC when RRC receives PUR configuration from eNB.**
2. **When TA validation fails due to other than expiration of TA timer, the PUR TA timer is not stopped (i.e. keeps running until expiry).**
3. **MAC entity starts the PUR TA timer when the MAC entity is configured with the PUR TA timer.**
4. **TA adjustment by DCI is captured in MAC specification 5.4.x.2 to include the condition “when a Timing Advance Command MAC control element is received or PDCCH indicates timing advance adjustment as specified in TS 36.212 [5]”.**
5. **RAN2 confirms TA validation procedure is captured/kept in RRC spec.**
6. **When "PUR fallback indication" is received, MAC stops monitoring PDCCH in PUR response window.**
7. **(Already captured in MAC CR) Upon L1 ACK indication received from lower layers, MAC indicated PUR success to the RRC.**
8. **In RRC CR 5.3.3.3x, add “NOTE: UE actions upon reception of fallback/failure indication from lower layers (see TS 36.213 [23]) is left up to implementation.” Remove Editor’s Notes.**
9. **Upon PUR fallback indication from lower layers, MAC indicates PUR fallback and PUR failure separately to the RRC.**
10. **Upon reception of RRC message indicating successful PUR transmission, RRC does not need to indicate this to MAC layer.**
11. **Working assumptions: (Can be used as baseline for CR and revisit if there is a problem):**
    1. **RRC provides PUR configuration to MAC once and MAC calculates the PUR grant for each PUR occasion.**
    2. **“m” counter is maintained in MAC. When the counter value reaches the configured max value, MAC sends indication to RRC to release PUR configuration.**
12. **FFS:**
    1. **Where to capture PUR release due to RACH initiation on a new cell.**
13. **Similar to EDT, upon transmission using PUR, RRC configures PHY to use PUR.**
14. **EDT value for timer t300 applies when UL data is included in transmission using PUR.**
15. **When UL data is not included (i.e. only RRC message is included) in transmission using PUR, non-EDT value applies to t300.**
16. **PUR periodicity includes at least values of several minutes, tens of minutes, ~hour, several hours, ~one day. FFS exact minimum and maximum values and total number of values.**
17. **TA validation criterion “Serving cell changes” applies also when handover and RRC Connection Re-establishment results in RA in a new cell.**
18. **TA timer range is multiple of PUR periodicities, e.g. 1,…, 8.** 
    1. **FFS on exact values and whether offset is applied so that e.g. retransmissions are covered.**
19. **For NB-IoT: The value range for PUR response timer is same as in EDT (FDD): {pp1, pp2, pp3, pp4, pp8, pp16, pp32, pp64} with upper boundary 10.24 s.**
20. **For eMTC: The value range for PUR response timer is same as in EDT: {sf240, sf480, sf960, sf1920, sf3840, sf5760, sf7680, sf10240}.**
21. **Number of PUR grant occasions requested can be one or infinity.**
22. **Working assumptions**
    1. **PUR periodicity configuration granularity is based on counts of binary multiples of HSFN, i.e. full SFN cycles (= 10.24 s).**
    2. **PUR periodicity is {hsf8, hsf16, hsf32, hsf64, hsf128, hsf256, hsf512, hsf1024, hsf2048, hsf4096, hsf8192, spareX, [FFS]}.**
    3. **Maximum PUR time offset range should be the same as maximum PUR periodicity. FFS further details e.g. how exact PUR start time is configured.**
23. **FFS**
    1. **how storing of PUR parameters would be split between eNB and MME and other details before agreeing on where PUR configuration is stored for CP solution.**
    2. **if and how eNB links CP-PUR configuration to each UE in RRC\_IDLE.**
    3. **To ask RAN1**
       1. **RAN2 to confirm L1 update on repetition number is not intended to update the RRC configuration (i.e. higher layer configuration) but adjust the configuration provided by higher layers.**
       2. **whether L1 adjustment applies only to retransmissions or also future PUR UL transmissions and where it is stored.**

**Scheduling multiple DL/UL transport blocks [MTC & NB-IoT]**

1. **For LTE-M, the length of HARQ RTT timer is set to 7+k\*N for bundled HARQ ACK, where k is equal to the number of HARQ ACK bundles.**
2. **Remove Editor's note from the document that captures RAN2 agreements and clarify that those agreements are for non-interleaved NB-IoT case.**
3. **Capture the following RAN1 agreement in RAN2 specifications: “For NB-IoT, support of multiTB-UL-r16 and multiTB-DL-r16 is conditional on support of two HARQ processes.”**
4. **Proposals 8 and 9 are to be discussed within the context of RAN1 feature list, i.e. once finalized, those will be captured in RAN2 specifications**
   1. **Proposal 8 For NB-IoT, introduce separate capabilities multiTB-UL-Interleaving-r16, and multiTB-DL-Interleaving-r16 conditional to support of multiTB-UL-r16 and multiTB-DL-r16 respectively.**
   2. **Proposal 9 For NB-IoT, introduce a new capability multiTB-HARQ-ACK-Bundling-r16, conditional to support of multiTB-DL-Interleaving-r16.**
5. **For LTE-M, the length of HARQ RTT timer is set to 7+k\*N for bundled HARQ ACK, where k is equal to the number of HARQ ACK bundles.**
6. **Remove Editor's note from the document that captures RAN2 agreements and clarify that those agreements are for non-interleaved NB-IoT case.**
7. **Capture the following RAN1 agreement in RAN2 specifications: “For NB-IoT, support of multiTB-UL-r16 and multiTB-DL-r16 is conditional on support of two HARQ processes.”’**
8. **For LTE-M and NB-IoT, multiple TBs scheduling is enabled separately for uplink and downlink for unicast.**
9. **Capture TP for MultiTB-Config-NB in [2] in the running RRC CR for NB-IoT.**
10. **For LTE-M and NB-IoT, multiple TBs scheduling in multicast is optional without capability reporting.**
11. **For LTE-M and NB-IoT, the configuration for scheduling gap is in SCPTMConfiguration(-NB) (SC-MCCH).**

**Quality report in Msg3 [MTC]**

1. **RAN2 confirms that 2-bit CQI report in MSG3 is supported.**
2. **Quality Report trigger in Connected Mode for eMTC is the same MAC CE as agreed for NB-IoT.**
3. **When 2-bit CQI reporting enabled in MSG3 then 8-bit reporting shall also be enabled.**
4. **Separate flags are not required to enable/disable CQI reporting per CE level.**

**MPDCCH performance improvement using CRS [MTC]**

1. **Power ratio can be included in dedicated signalling (in addition to SIB2).**
2. **Localized mapping type is possible to be included only in dedicated signalling. Value “predefined” is DEFAULT.**
3. **It should be possible to enable the feature for IDLE mode UEs but disable in CONNECTED mode.**
4. **TP1 in R2-2001879 (with separate IEs CRS-ChEstMPDCCH-ConfigCommon-r16 and CRS-ChEstMPDCCH-ConfigDedicated-r16) is baseline for running CR.**

**Idle mode mobility [MTC]**

1. **No consensus on any of the alternatives**

**Stand-alone deployment [MTC]**

1. **In standalone deployment, if a UE considers itself to be in enhanced coverage with S criteria of normal coverage fulfilled, absolute priorities for cell reselection are used (i.e. UE does not switch to ranking as it would when in enhanced coverage due to S-criteria).**

**Mobility Enhancements [MTC]**

1. **Email discussion after the meeting (on TP for RSS).**

**Coexistence with NR [MTC]**

1. **For NB-IoT:**
   1. **Resource reservation configuration for NR coexistence is provided via dedicated RRC signaling.**
   2. **Resource reservation configuration for NR coexistence is provided in PhysicalConfigDedicated-NB.**
   3. **New Rel-16 IE (s) can be introduced in PhysicalConfigDedicated-NB for providing resource reservation configuration for NR coexistence.**
   4. **For FDD, two independent parameters in UL and DL are needed for providing UL and DL resource reservation configuration separately.**
   5. **For TDD, two independent parameters in UL and DL are needed for providing UL and DL resource reservation configuration separately.**
   6. **One new IE structure for resource reservation configuration for both DL and UL, and for both TDD and FDD are introduced.**
   7. **Independent definition for periodicity and start position parameters are introduced and the dependency between them can be clarified in the field description.**
   8. **Working assumption: Introduce two UE capabilities for handling resources reservation on DL or UL in PhyLayerParameters-NB-v16xy.**
   9. **Working assumption: Two UE capabilities for handling resources reservation on DL or UL in PhyLayerParameters-NB-v16xy can be applied to both FDD and TDD, e.g., with separate values for FDD or TDD.**
   10. **Working assumption: Two UE capabilities for handling resources reservation on DL or UL can be introduced into TS 36.306, e.g., section 4.3.4.**
2. **For eMTC:**
   1. **Configurations related to resource reservation and DL subcarrier puncturing for NR coexistence are provided via dedicated RRC signaling.**
   2. **The configurations related to resource reservation and DL subcarrier puncturing for NR coexistence can be provided in PhysicalConfigDedicated.**
   3. **For FDD, two independent parameters in UL and DL are needed for providing UL and DL resource reservation configuration separately.**
   4. **For TDD, two independent parameters in UL and DL are needed for providing UL and DL resource reservation configuration separately.**
   5. **One new IE structure for resource reservation configuration for both DL and UL, and for both TDD and FDD are introduced.**
   6. **A parameter for providing DL subcarrier puncturing configuration can be introduced in PhysicalConfigDedicated, which is for both FDD and TDD.**
   7. **Working assumption: Introduce four UE capabilities for handling resources reservation on UL and DL, and for CE mode A and CE mode B separately, in PhyLayerParameters-v16xy.**
   8. **Working assumption: Introduce two UE capabilities for handling DL subcarrier puncturing for CE mode A and CE mode B separately, in PhyLayerParameters-v16xy.**
   9. **Working assumption: Six UE capabilities mentioned in Proposal 2-7 and Proposal 2-8 for handling resources reservation or DL subcarrier puncturing can be applied to both FDD and TDD, e.g., with separate values for FDD or TDD.**
   10. **Working assumption: Six UE capabilities for handling resources reservation or DL subcarrier puncturing can be introduced into TS 36.306.**
3. **Send a LS to RAN1 to check whether it should be possible to have a common configuration for all NB-IoT carriers for resource reservation for NR coexistence. For NB-IoT and eMTC whether it is possible to optimize signalling.**

**Connection to 5GC (eDRX, EDT, UP optimisation, RRC\_INACTIVE and other MTC specific topics) [MTC & NB-IoT]**

1. **DRBs are resumed upon receiving RRCConnectionResume in UP optimization when connected to 5GC.**
2. **When idle mode eDRX is not configured, eMTC UEs in RRC\_INACTIVE monitor the paging occasions according to the shortest of the cell default paging cycle, the UE specific DRX (if configured), and the RAN paging cycle (if configured).**
3. **When idle mode eDRX is not configured, eMTC UEs in RRC\_INACTIVE cannot be configured with values 5.12 sec and 10.24 sec**
4. **DRB resumption for EDT for eMTC UEs connected to 5GC follows the same principle as in EPC, i.e.:**
   1. **drb-ContinueROHC is provided in RRCConnectionRelease message triggering the suspension in RRC\_IDLE. The flag applies to all DRBs.**
   2. **When resuming the DRBs for EDT, RRC procedure text triggers PDCP re-establishment and provides NR PDCP with the drb-ContinueROHC indication received in RRCConnectionRelease message.**

**Connection to 5GC (Other common aspects) [MTC & NB-IoT]**

1. **AS RAI can be used when connected to EPC or 5GC, including when in RRC connected mode and using CP/UP optimisations, EDT, or PUR.**
2. **AS RAI can be provided with any higher layer PDU transmission in the UL including the last one or with no higher layer PDU transmission in the UL.**
3. **AS RAI is provided in the same MAC CE as the DL channel quality report.**
4. **One of the codepoints for AS RAI implies “no indication”.**
5. **AS RAI has higher priority than data when AS RAI and DL channel quality report are provided in the same MAC CE.**
6. **No other mechanisms are introduced to provide R16 AS RAI.**
7. **Codepoints for AS RAI are allocated as follows:**
   1. **Code Point 00: No RAI information**
   2. **Code Point 01: no subsequent DL and UL data transmission is expected**
   3. **Code Point 10: a single subsequent DL transmission is expected**
   4. **Code Point 11: Reserved.**
8. **AS RAI, when triggered, should have higher priority than data if including AS RAI would not lead to data segmentation.**
9. **For EDT and PUR: When AS RAI is triggered by upper layers but cannot be sent along with the associated MAC SDU due to MAC prioritisation, AS RAI is cancelled.**
   1. **FFS non-EDT/non-PUR case**
10. **Similar as UP CIoT EPS Optimization, rrc-SuspendIndication in RRCConnectionReject can be supported for UP CIoT 5GS Optimization. No change for specification is needed.**
11. **DL channel quality report can be supported for both NB-IoT and eMTC connected to 5GC.**
12. **Confirm the working assumption that cause delayTolerantAccess it not applicable to 5GC.**
13. **Confirm the working assumption that there is no need for an indication of extended Idle mode DRX support in system information for NB-IoT.**
14. **Confirm the working assumption that there is a new IE cp-EDT-5GC-r16 in SIB2-BR/SIB2-NB to indicate ng-eNB connected to 5GC supports CP MO-EDT.**
15. **Revert the working assumption that the values ‘n’ and ‘m’ for the truncation of the 5G-S-TMSI are signalled per PLMN in SystemInformationBlockType2-NB.**
16. **Remove the IE cp-ReestablishmentPLMNList-5GC-r16 in SystemInformationBlockType2-NB.**
17. **The existing capability multipleDRB-r13 is also applicable to 5GC**
18. **PUR is supported in EPC and 5GC.**
19. **Introduce separate indications up-PUR-5GC-r16 and cp-PUR-5GC-r16 in SIB2-BR/SIB2-NB**
20. **Introduce separate UE capabilities pur-UP-5GC-r16 and pur-CP-5GC-r16.**
21. **Add ab-PerRSRP-r16 parameter (same definition as SIB14-BR) in SIB25-BR.**
22. **BL UEs or UEs in CE in RRC\_CONNECTED mode performs access barring check based on the latest UAC parameters acquired prior to entering RRC\_CONNECTED.**
23. **For 5GC, CP re-establishment is always enabled and there is no need for an indication in system information.**
24. **systemInformationBlockType25-BR follows the same system information update mechanism as SIB14-BR and does not affect the value tag.**
25. **A new parameter uac-ParamModification (similar to eab-ParamModification) is introduced in the Paging message and in the Direct Indication Information to indicate SIB25-BR modification and scheduling.**

**Others [MTC]**

1. **DRBs are resumed upon receiving RRCConnectionResume in UP optimization when connected to 5GC.**
2. **When idle mode eDRX is not configured, eMTC UEs in RRC\_INACTIVE monitor the paging occasions according to the shortest of the cell default paging cycle, the UE specific DRX (if configured), and the RAN paging cycle (if configured).**
3. **When idle mode eDRX is not configured, eMTC UEs in RRC\_INACTIVE cannot be configured with values 5.12 sec and 10.24 sec**
4. **DRB resumption for EDT for eMTC UEs connected to 5GC follows the same principle as in EPC, i.e.:**
   1. **drb-ContinueROHC is provided in RRCConnectionRelease message triggering the suspension in RRC\_IDLE. The flag applies to all DRBs.**
   2. **When resuming the DRBs for EDT, RRC procedure text triggers PDCP re-establishment and provides NR PDCP with the drb-ContinueROHC indication received in RRCConnectionRelease message.**
5. **- When idle mode eDRX is configured, eMTC UEs in RRC\_INACTIVE monitor the paging occasions (POs) during CM-IDLE PTW according to the min {UE specific DRX cycle, default DRX cycle, RAN paging cycle} and monitor paging occasions (POs) outside CM-IDLE PTW according to RAN paging cycle.**
6. **- PDCP Suspend is triggered at the time of suspension to RRC\_IDLE for eMTC UEs connected to 5GC.**
7. **- DRB resumption for non-EDT for eMTC UEs connected to 5GC follows the same principle as in RRC\_INACTIVE, i.e.:**
   1. **When resuming the DRBs for non-EDT, RRC procedure text does not trigger PDCP re-establishment.**
   2. **PDCP re-establishment and ROHC continuation for each DRB are triggered by the presence of the respective flags in RRCConnectionResume message as specified in TS 38.331 [82], clause 5.3.5.6;**
8. **- When resuming the RRC connection, the default RLC configuration and default (NR) PDCP configuration is applied to SRB1 for eMTC and NB-IoT UEs connected to 5GC.**

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| **Company’s name** | **Agreement number** | **Company’s view** |
| Intel | 56-73, 99-106 | * 56-73, 99-106: No impact foreseen on MTC specific stage-2 TP. * The TP for common topic of MTC and NB-IoT (agreement shown in grey) will be further aligned with the latest ones captured in the email discussion [313]. |
| Ericsson |  | Agreements are mostly stage-3 agreements and should not be captured in such detail in a stage-2 specification in general |
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# Discussion on TP already captured in different sections

It is important to remember that depending on companies’ views in Discussion point 1), there might TP/sections that would be removed (if option b is preferable) or that would be updated to align with the TPs on email discussion [313] (if option a is preferable)

## Section 2 on References, 5 on Physical Layer for E-UTRA and 8 on E-UTRAN identities

1. Companies are invited to provide their views and/or suggested TP for section 7 on RRC. Note that the following editor notes are captured in this section within 7.2 “*Editor’s Note: FFS whether some additional information needs to be mentioned for PUR”*.

Following option a) of discussion point 1), TP of sections 2, 5 and 8 are updated based on the latest TP captured on the running CR of email discussion [313] version “v3” available on 03/04 (with the updated/new TP tracked by RAN2#109e).

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| **Company’s name** | **Company’s view** |
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## Section 7 on RRC

1. Companies are invited to provide their views and/or suggested TP for section 7 on RRC. Note that the following editor notes are captured in this section within 7.3a “*Editor’s note: To be confirmed whether to follow EDT or RRC\_INACTIVE for resumption of DRBs. In this CR, EDT procedure is followed*”, within 7.3b “*Editor’s note: This section may be updated for 5GS once the description is available in TS 23.502*”, and within 7.3x “*Editor’s note: To be updated considering discussion from the NB-IoT CR. So far no change specific only to eMTC is identified*”.

Following option a) of discussion point 1), TP of sections 7.1, 7.2, 7.3, 7.3a, 7.3b, 7.3x, and 7.3y are updated based on the latest TP captured on the running CR of email discussion [313] version “v3” available on 03/04 (with the updated/new TP tracked by RAN2#109e). This also includes the removal of all those previous Editor’s notes although new ones are added in section 7.3y.

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| **Company’s name** | **Company’s view** |
| Huawei | section 7.1: bullet: ‘For a NB-IoT UE that supports NG-U data transfer or User Plane CIoT 5GS Optimisation, as defined in TS 24.501 [xx]:’ only applies to NB-IoT and should not be included in eMTC CR  [Intel] It is removed without track changes.  section 7.2: Editor’s note can be removed. PUR is based on CIOT optimisation  [Intel] It is removed without track changes.  section 7.3.b2. The update in the last paragraph only applies to NB-IoT and should not be in the eMTC CR ‘, and for a NB-IoT UE that supports Control Plane CIoT 5GS Optimisation and NG-U data transfer or User Plane CIoT 5GS Optimisation, as defined in TS 24.501 [xx],’  section 7.3x.1: put NB-IoT into []:’MT-EDT is only applicable to BL UEs, UEs in enhanced coverage [and NB-IoT UEs].  [Intel] It is removed without track changes.  section 7.3x.3. in NB-IoT CR it it propose to revert the changes from RAN3 in step 3 and 4 ‘may’  [Intel] No change is done as current TP looked aligned to the version 4 of email discussion [313]. Please let me know if I may miss anything.  section 7.3y.1: put NB-IoT into [] and add eMTC UEs: Transmission using PUR is only applicable to BL UEs, UEs in enhanced coverage [and NB-IoT UEs]  [Intel] It us updated.  section 7.3y.1: remove the editor’s about the CP solution. FFS is captured in the agreements.  [Intel] It is removed without track changes.  section 7.3y.2: NOTE 1 and 2 have been moved in step 1 in the NB-IoT CR v4  [Intel] It is removed without track changes.  section 7.3y.3: NOTE 1 and 2 have been moved in step 1 in the NB-IoT CR v4  [Intel] It is removed without track changes. |
| Huawei1 | section 7.1. the change below only applies to NB-IoT and can be removed  -For NB-IoT, a UE dedicated SRB is supported before AS security is activated and only one UE dedicated SRB is supported after AS security is activated;  section 7.3x.1 : please change as below  MT-EDT is only applicable to BL UEs, UEs in enhanced coverage [and NB-IoT UEs].  section 7.3x.3 RAN3 changes have been reverted in NB-IOT CR  2. The MME includes the DL data size in the S1-AP PAGING message to assist eNodeB in triggering MT- EDT.  4. The UE initiates the MO-EDT procedure for the User Plane CIoT EPS Optimisations as described in subclause 7.3b.3 / figure 7.3b-2 with the following differences:  section 7.3y.3 and 7.3y.4 the wrong NOTE 1 has been deleted. should be  NOTE 1: If the MME/AMF or the (ng-)eNB decides to move the UE in RRC\_CONNECTED mode, *RRCConnectionSetup* message is sent in step 7 to fall back to the legacy RRC Connection establishment procedure, a new C-RNTI can be assigned. The (ng-)eNB will discard the zero-length NAS PDU received in *RRCConnectionSetupComplete* message. |
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## Section 10.1.4 Paging and C-plane establishment

1. Companies are invited to provide their views and/or suggested TP for section 10.1.4 on Paging and C-plane establishment. Note that the following editor notes is captured in this section “*Editor’s Note: FFS whether the paging operation in the MME/AMF is aware of the use of GWUS*,

Following option a) of discussion point 1), TP of section 10.1.4 is updated based on the latest TP captured on the running CR of email discussion [313] version “v3” available on 03/04 (with the updated/new TP tracked by RAN2#109e). This also includes the removal of previous Editor’s note.

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| **Company’s name** | **Company’s view** |
| Huawei | Figure 10.1.4-1: Heading style is not correct  [Intel] It is updated.  Figure 10.1.4-2: only applies to NB-IoT and should be removed  [Intel] It is removed without track changes.  Figure 10.1.4-3: Change to 10.1.4.x  [Intel] It is updated. |
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## Section 10.1.6 Radio link failure

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| **Company’s name** | **Company’s view** |
| Huawei | Not applicable to eMTC. Please remove  [Intel] It is removed |
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## Section 10.1.9 on Mobility in RRC\_INACTIVE

1. Companies are invited to provide their views and/or suggested TP for section 10.1.9 on Mobility in RRC\_INACTIVE. Note that the following editor notes is captured in this section “*Editor’s note: TBD if any change is needed for UE in enhanced coverage.”*.

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| **Company’s name** | **Company’s view** |
| Huawei | propose to remove the editor’s note (not allowed). We did not identify any change up to now in RAN2.  [Intel] It is removed the editor’s note and the section all together as there is not TP |
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## Section 11 on Scheduling and Rate Control

1. Companies are invited to provide their views and/or suggested TP for section 11 on Scheduling and Rate Control.

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| **Company’s name** | **Company’s view** |
| Ericsson | Section 11.1  Addition OK in general but suggestion to align (eventually) with NB-IoT wording (although NB-IoT is in different sections – but fine to keep in 11.1)  [Intel] Changed the following TP from  “For BL UEs or UEs in enhanced coverage, when multi-TB scheduling is configured, multiple downlink transmissions or multiple uplink transmissions, where each transmission corresponds to one HARQ process, can be scheduled via a single MPDCCH.”  To the following TP (o align it to NB-IoT one):  “For BL UEs or UEs in enhanced coverage, when multi-TB scheduling is configured, a single MPDCCH can indicate scheduling of multiple downlink transmissions, where each transmission corresponds to one HARQ process”  This is about section 11.x  Suggest to remove the exact name of the MAC CE as this is a stage-2 specification and there is no need to refer to exact naming. This would make maintenance more difficult and add unnecessary detail.  [Intel] The following sentences are removed without track changes “Transmitted either using Donwlink Channel Quality Report MAC control element or using MAC subheader during random access procedure” and “Transmitted using Donwlink Channel Quality Report MAC control element”  Perhaps we should clarify that this applies only to BL/CE UEs in the beginning, and some general (short) description?  [Intel] Added reference to “For BL UEs or UEs in enhanced coverage,” |
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## Section 15 on MBMS Transmission

1. Companies are invited to provide their views and/or suggested TP for section 15 on MBMS Transmission.

Following option a) of discussion point 1), TP of section 15 is updated based on the latest TP captured on the running CR of email discussion [313] version “v3” available on 03/04 (with the updated/new TP tracked by RAN2#109e)..

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| **Company’s name** | **Company’s view** |
| Ericsson | The NB-IoT and BL/CE text can be merged into a single sentence, at least wording should be aligned.  [Intel] It is updated as it is shown below in Huawei’s comment |
| Huawei | agree with merging.  For BL UEs and UEs in enhanced coverage [or NB-IoT UEs], when multi-TB scheduling is configured, a single MPDCCH[/NPDCCH] can indicate scheduling of multiple downlink transmissions.  [Intel] It is updated |

## Section 23 on Others

1. Companies are invited to provide their views and/or suggested TP for section 23 on Others. Note that the following editor notes is captured in this section “*Editor’s note: No change is made here as section 24.5 is updated instead*” which in our understanding could be removed.

Following option a) of discussion point 1), TP of section 23 is updated based on the latest TP captured on the running CR of email discussion [313] version “v3” available on 03/04 (with the updated/new TP tracked by RAN2#109e). This also includes the removal of previous Editor’s note.

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| **Company’s name** | **Company’s view** |
| Huawei | can remove section 23.13 from the CR (no change)  [Intel] It is removed |
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## Section 24 on support for 5GC

1. Companies are invited to provide their views and/or suggested TP for section 24 on support for 5GC. Note that the following editor notes is captured in this section “*Editor’s note: FFS selection between 5GC and EPC for BL UEs or UEs in enhanced coverage supporting connectivity to 5GC.*”

Following option a) of discussion point 1), TP of section 24 is updated based on the latest TP captured on the running CR of email discussion [313] version “v3” available on 03/04 (with the updated/new TP tracked by RAN2#109e).

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| **Company’s name** | **Company’s view** |
| Huawei | section 24.1 and 24.5 propose to put NB-IoT into brackets everywhere, e.g.  ‘CIoT 5GS Optimisations for BL UEs, or UEs in enhanced coverage [and NB-IoT UEs]  [Intel] It is updated  section 24.4: Editor’s note to be removed  [Intel] It is removed  section 24.5: ‘except for NB-IoT’ should be removed  [Intel] It is removed |
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## Miscellaneous

1. Companies are invited to provide other their views and/or suggested TP on the running CR to 36.300 for Rel-16 eMTC WI.

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| **Company’s name** | **Company’s view** |
| Huawei | In NB-IoT CR, we have added section 16.1.x for NR coexistence. Could consider to do the same for eMTC, same section but separate paragraph.  [Intel] New section is added as suggested with the following text  “For BL UEs or UEs in enhanced coverage, E-UTRAN may reserve resources in uplink and downlink to avoid resource overlap with NR when it is deployed within an NR carrier. The resource reservation signalled to the UE is carrier specific and is for use in unicast transmission” |
| Huawei1 | section 16.1.x. in eMTC reservartion is cell specific  For BL UEs or UEs in enhanced coverage, E-UTRAN may reserve resources in uplink and downlink to avoid resource overlap with NR when it is deployed within an NR carrier. The resource reservation signalled to the UE is cell specific and is for use in unicast transmission. |

# Summary

*<If needed, to be updated when doing the summary>*

1. *<If needed, to be updated when doing the summary>.*

# Conclusion

The proposals captured are the following:

***Proposal 1.*** *<If needed, to be updated when doing the summary>.*

# References

1. R2-2001097 Introduction of Rel-16 eMTC enhancements, Intel Corporation , Rel-16, TS 36.300, v16.0.0, CR#1267, category B, LTE\_eMTC5-Core.