**3GPP TSG RAN WG1 Meeting #102-e                     R1-200664x**

**e-Meeting, August 17 – 28, 2020**

**Agenda Item: 7.2.2.2.2**

**Source: Moderator (Charter Communications)**

**Title: Feature lead summary on for initial access procedures enhancements**

**Document for: Discussion and Decision**

# Introduction

A number of proposed corrections to Rel-16 specifications have been submitted to RAN1#102-e on initial access procedures for NR-U [1]-[9]. This first summary provides a list of the submitted corrections/clarifications and a proposal for multiple email discussions to resolve the corrections identified as higher priority.

# Corrections for SS/PBCH Block

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| Issue # | Description | Tdoc | Email discussion |
| 2.1 | Discuss the difference between the first and last candidate SS/PBCH block index of the SS/PBCH block burst within a transmission window – whether to limit it to Q or not. | R1-2006096 | N (extensive discussion in last meeting) |
| 2.2 | In the paragraph above Table 4-1 in 38.213 Sec 4.1, remove quotation marks around the text *operation without shared spectrum* | R1-2005915 | N (minor editorial) |
| 2.3 | Merge the determination process of QCL and SSB index in Clause 4.1 in TS 38.213 to clarify the relationship between SSBs with the same SSB index within a same DRS transmission window or across DRS transmission windows. | R1-2005601 | N (editorial) |
| 2.4 | The MIB interpretation ambiguity issue for overlapping frequency bands should be resolved. Different sync raster point are defined for licensed and unlicensed operation. | R1-2006021 | In RAN1#101-e and RAN1#102-e, covered in AI 7.2.2.1.1 but no consensus to discuss further |
| 2.5 | Reflect RAN4 agreement that UE is allowed to take any active SCell in the cell group as timing reference cell in TS 38.213 Subclause 4.1. | R1-2005601 | Y |
| 2.6 | For FBE, the DRS window length is no longer than an FFP. | R1-2006764 | N (No consensus on related proposals in previous two meetings) |
| 2. | Remove redundant references to both ¯L\_max and k\_SSB definitions in TS 38.212 Clause 7.1 | R1-2006449 | N (editorial change, plus better suited to AI 7.2.2.1.1) |

# Corrections for RACH

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| Issue # | Description | Tdoc | Email discussion |
| 3.1 | Align bit length of DCI format 1\_0 with CRC scrambled by RA-RNTI or MsgB-RNTI (currently 28) with bit length of Format 1\_0 scrambled by other RNTI (30 bits) by changing reserved bits from 14 to 16. | R1-2005756 | Y |
| 3.2 | FFP identification signal (e.g. Type 0 PDCCH without scheduling data) is triggered in front of the FFP within which there is configured ROs, or  An idle UE operating in FBE mode may transmit PRACH only within FFPs for which SSB, RMSI (and more generally, SIBs) or Paging Requests are transmitted by the gNB. | R1-2005334 R1-2006449 | N (Current spec implies that idle UE may transmit PRACH only within FFPs for which, for e.g., SSB, RMSI, SIBs are detected) |
| 3.3 | Reflect latest RAN2 agreement in 38.212 that LSB of SFN is not always in the DCI 1\_0 when RAR/msgB window is smaller than 10ms; remove “if applicable wording” in 38.213 Section 8.2 and 8.2A. | R1-2005810 R1-2006449 R1-2005915 | Y |
| 3.4 | Since 38.300 is Stage 2 spec, update TS 38.211 to restrict both the use of these new long ZC sequences to NR-U and the use of the long ZC sequence corresponding to L\_RA = 839 to NR according to [7], section 5.3.4. | R1-2006449 | N |

# Corrections for RRM/RLM

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| Issue # | Description | Tdoc | Email discussion |
| 4.1 | Whether to align “A UE shall not average CSI-RS measurements for channel estimation across different transmission bursts from the UE's perspective” with definition of transmission burst from gNB perspective in 38.214.  and  The “*not average CSI-RS*” statement in 38.214 subclause 5.2.1.1 is not applicable to NZP CSI-RS for L1-RSRP, RLM, BFD, CBD and RRM but only to RI-PMI-CQI, RI-il, RI-il-CQI, RI-CQI or RI-LI-PMI-CQI measurements. | R1-2006096 R1-2006449 | Y |
| 4.2 | Either RAN1 does not reply to the RAN4 LS on beam failure due to LBT failures during active TCI switching, as RAN2 has already replied, or,  - RAN1 sends a reply LS to RAN4 referring to RAN2 reply and with the same ACTION | R1-2006449 | N (no reply requested from RAN1) |
| 4.2 | If one CSI-RS resource is configured as RLM-RS, UE should skip invalid CSI-RS when performing IS and OOS evaluation. For one CSI-RS resource configured as RLM-RS, if there is no any valid CSI-RS sample in the latest indication period between current indication time and previous indication time, the CSI-RS resource will not be considered as the active resource and there will not be any IS and OOS reporting. | R1-2005334 | N (no consensus in WI phase; UE follows CSI-RS cancellation/validation agreements in AI 7.2.1.2 from RAN1#101-e) |

# Proposed email discussion for phase 1 of RAN1#102-e

A single email discussion focused on new issues is proposed for simplicity in AI 7.2.2.2.2 during the RAN1#102-e preparation phase until 8/14:

* [101-e-NR-unlic-NRU-InitAccessProc-01]
  + (#2.5) Timing reference cell.
  + (#3.1) DCI Format 1\_0 bit-length alignment.
  + (#3.3) Reflect LSB of SFN is not always in the DCI 1\_0 when RAR/msgB window is smaller than 10ms.
  + (#4.1) Further clarifications on CSI-RS measurement averaging.

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| **Company** | **Views** |
| Samsung | For (#2.1), we don’t think this topic has been extensively discussed in the last meeting. FL assigned this topic to 7.2.2.2.1 in the last meeting, but refused by the FL there since the spec impact is not related to channel access. In this sense, this topic was not treated yet. Also, in the last meeting’s emails, still companies are questioning whether this restriction is applicable or not, so we believe it’s essential to include this topic into the email discussion. If there is an easy consensus on not introducing this restriction, it is still good to clarify. There should be no inconsistence of the implementation from the gNB and UE perspectives on the SSB transmission, and that’s why the discussion is essential (no matter what alternative to choose).  For (#2.5), procedure wise, should this proposal be triggered by a RAN4 LS (or we missed that LS?). If a RAN4 agreement has RAN1 spec impact, RAN4 should already send an LS to address this aspect, since they are the best judger whether a corresponding work in other working group is needed. Can FL or proposing company clarify the situation?  For (#3.3), the current wording of “if included and applicable” already covered the intention of RAN2 LS (we thought that’s why we use “applicable” at the beginning). Proposals for improving the wording in TS 38.213 for clarity is good, but seems not essential.  For (#4.1), we support to resolve the remaining issue from last meeting (either in this agenda or 7.2.2.1.2). |
| Qualcomm | For 2.6, if we don’t have this, we will need another UE capability to support DRS/DMTC window longer than FFP, as the BFG for FBE only cover the case DRS/DMRS no longer than FFP. |
| LG Electronics | For (#3.3), we would request FL to capture our Tdoc (R1-2006647) which is submitted under AI 5 but addresses the same issue. By the way, the corresponding RAN2 LS may have an impact on two specifications where correction for 38.212 seems essential while correction for 38.213 seems editorial, as Samsung mentioned.  For (#4.1), we also support to discuss it at this meeting but coordination with moderator of DL AI seems necessary to avoid overlapping, as Samsung pointed out. If it will be supposed to be handled under this AI, please capture our Tdoc (R1-2006299) where P8 and P9 deal with this issue. |
| Ericsson | * Issue #2.5: Do not agree to discuss this issue   + We don't think there is any RAN1 spec impact for this as we discussed in our contribution in RAN1#101-e (see R1-2003844 Section 2.2). RAN4 already captured the agreement in the LS in their specs   + The key sentence in 38.133 Section 7.1.1 is the following:   "For serving cell(s) in STAG, UE shall use any of the activated SCells as the reference cell for deriving the UE transmit timing for the cells in the STAG"   * Issue #3.1: Agree to discuss   + Needs to be coordinated with discussion on Issue #3.3 since both issues will touch the same paragraph in 38.212. * Issue #3.3: Agree to discuss   + Changes needed to both 38.212 and 38.213 * Issue #4.1: Okay to discuss here, consistent with the prior meeting where it was treated under this AI. The only clarification needed is that the averaging applies to the case when the higher layer parameter *reportQuantity* is set to 'cri-RI-PMI-CQI', 'cri-RI-LI-PMI-CQI', 'cri-RI-i1', 'cri-RI-CQI' or 'cri-RI-i1-CQI' * Regarding issue #2.1, we don't think there is any spec impact for either of the alternatives listed in R1-2006096. |
| CATT | For Issue#3.3, we kindly request FL to include our contribution (R1-2005655) which is submitted to AI 5 to address the same issue.  It will have impact on at least TS 38.212 in order to align with RAN2 agreements in RAN2 LS (R1-2005204). |
| ZTE, Sanechips | For Issue #2.5: It’s necessary to discuss because RAN4 agreement has RAN1 impact.  In RAN4 LS (R1-2003272/R4-2005373) to RAN1 in last meeting, RAN4 provided the following information:  *According to the UE transmit timing requirements (section 7.1, TS 38.133) in endorsed CR (R4-2005374), for the UE operating in scenario B or in scenario C, if a reference cell in a cell group (CG) is unavailable at the UE for more than 160 ms then the UE [can or shall] use any of the activated SCell(s) as its reference cell for deriving its transmit timing.*  However, in current RAN1 specification, Clause 4.1 in TS 38.213 [1] in particular, it says:  *“For a serving cell without transmission of SS/PBCH blocks, a UE acquires time and frequency synchronization with the serving cell based on receptions of SS/PBCH blocks on the PCell, or on the PSCell, of the cell group for the serving cell.”*  This shows the existing RAN1 specification cannot completely reflect the latest agreements from RAN4.  To Samsung: RAN4 has sent an LS to RAN1 in 101-e meeting, but RAN1 didn’t discuss this issue in last meeting(perhaps due to the overloaded email thread?).  To Ericsson: Yes, RAN4 has already captured the agreement in their specs, but it conflicts with current RAN1 spec 38.213, so I think this issue has RAN1 impact and needs discussion.  For Issue #4.1, we slightly recommend to discuss how to align different discovery burst from UE’s and gNB’s perspective in DL agenda.  For Issue #2.1, we have extensively discussed this issue in 100b-emeeting, which is triggered by MTK, I think at last we finally reached a common understanding of Alt2(aligned with current spec). |
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# References

1. R1-2005334 Remaining issues on initial access procedure for NR-U vivo
2. R1-2005601 Remaining issues on the initial access procedure for NR-U ZTE, Sanechips
3. R1-2005756 TPs on DCI reserved bits length in NR-U NEC
4. R1-2005810 Maintenance on initial access procedures Huawei, HiSilicon
5. R1-2005915 Enhancements to initial access procedures Ericsson
6. R1-2006021 Discussion on the remaining issues of enhancements to initial access procedure OPPO
7. R1-2006096 Initial access procedures for NR-U Samsung
8. R1-2006449 On Enhancements to Initial Access Procedures for NR-U Nokia, Nokia Shanghai Bell
9. R1-2006764 TP for Initial access and mobility procedures for NR-U Qualcomm Incorporated