**3GPP TSG-RAN WG4 Meeting #104-e draft R4-22xxxxx**

**<Electronic Meeting>, 15 ‒ 26 August, 2022**

**Title:** WF on testability aspect of BC in RRC\_INACTIVE and initial access

**Agenda Item:** 11.7.4

**Source: Nokia**

**Document for:** Approval

# Sub-topic 1: Rel-18 Beam Correspondence Test Issues

* Overall comment: it may be premature to discuss testability [Ericsson]

**Way forward/Agreement:**

* BC test for RRC\_INACTIVE (if applicable) and IA is at UE maximum output power
  + what is RRC\_INACTIVE and initial access? [Xiaomi]
  + Xiaomi: we have concern on the wording. It is related RRC\_inactive mode. RRC\_inactive mode means STD.
  + Qualcomm: why do we need “if applicable”?
  + Huawei: similar reason as the previous agreement. RRC\_inactive needs further discussion. Maybe RRC idle and RRC inactive tests are the same. We cannot say RRC inactive is really needed and defined now.
  + ZTE: to Xiaomi, inactive mode is not equivalent to STD.
  + OPPO: for RRC inactive, it is premature to say to test as MOP. For how to test and what it looks like .. we are open.
  + Samsung: it is little complicated. For RRC\_inactive, BC requirement we have no consensus yet. There are discussions on test reduction and test time. The bullet does not exactly reflect the discussion.
  + ZTE: for testability for RRC inactive mode, RAN5 agreed the simple solution by using loop mode B and other new timer.
* BEAM\_LOCK is not available in RRC\_INACTIVE and IA mode

**Agreement:**

* BC test for RRC\_INACTIVE (if applicable) and RRC\_Idle is at UE maximum output power

**Way forward/FFS:**

* FFS: discuss if and how UE Tx beam should/would change during IA and what are the impact on the test method.
* FFS: Feasibility of testing UEs in Inactive mode
* FFS: Feasibility of triggering SDT in test mode
  + This is implementation dependent [ZTE]
* FFS: Without beam lock function, achieving UE max output power may be done by holding RAR message to enable power ramping until maximum output power and implication on UE implementation of beam/panel choice during IA.
  + Clarification on “Without beam lock function” and “implication of UE implementation of beam/pane choice during IA” [Samsung, Sony, vivo, CMCC]
    - Altenative text
    - FFS: Whether and how UE Tx beam should/would change without beam lock function during IA when test equipment is holding RAR to achieving UE max output power. [Sony]
  + UE may not reach to max power [CMCC, ZTE]
* FFS: Number of tests, test time implications and proposed test time reductions
* FFS: polarization aspects without beam lock function [Samsung] in testing

|  |  |
| --- | --- |
| Company | Agree/Disagree, include justification |
| Samsung | For 4th bullet of FFS list, we wonder why beam lock function is involved, and could proponents clarify about the necessity of “implication on UE implementation of beam/panel choice during IA.”?  For the last bullet of FFS list, it may be helpful to add the context of “without beam lock function” in the polarization aspects. |
| HW | Regarding 1st Agreement bullet  Whether BC requirements need to be specified in RRC\_INACTIVE mode is still FFS. Propose to update as following:   * “BC test for RRC\_INACTIVE (if applicable) and IA is at UE maximum output power” |
| Sony | Agree with Samsung on the fourth bullet, suggest to remove “without beam lock function”. This proposal is due to the lack of power up command in IA but not due to the issue of beam lock. |
| vivo | We support keep 4th bullet, we think this bullet is related to the 1st bullet.  To Samsung and Sony:  If a UE keeps transmitting msg1 but never receives the RAR, what will the UE do in the field? One potential behaviour is UE may think the current beam is wrong and change to another beam and the strategy is depend on the UE implementation. |
| CMCC | according to 38213, “If prior to a PRACH retransmission, a UE changes the spatial domain transmission filter, Layer 1 notifies higher layers to suspend the power ramping counter as described in [11, TS 38.321]”.  Therefore, it seems original “implication on UE implementation of beam/panel choice during IA” is necessary to help identify whether UE has changed its beam.  Another question is that how could we know that UE has transmitted with max output power? the time to allow UE transmit with max transmit power should be taken carefully because once PREAMBLE\_TRANSMISSION\_COUNTER equal to max value, UE will assume initial access fails. We should make sure the time for UE to achieving max power should be limited before PREAMBLE\_TRANSMISSION\_COUNTER equal to max value. |
| ZTE | On the third FFS bullet on triggering SDT in test mode, this may involve many factors, and some may be purely UE implementation dependent.  On the fourth FFS bullet, holding RAR message so UE will ramp its preamble power, until maximum output power. However, UE may stop before reaching maximum output power if overseeding the maximum number of trials, thus the test should be designed to avoid this. |
| Xiaomi | What is the meaning of RRC\_INACTIVE and IA in 1st and 2nd agreement bullets? Does RRC INACTIVE specifically refer to RA-SDT and CG-SDT? In my understanding, the process from Inactive mode and Idle mode to connected mode is called initial access. |
| Sony | Thanks to the explanation from vivo. After some offline discussion and clarification, we understand the reasoning of “Without beam lock function” in fourth bullet point is to address “the UE beam/panel choice”. To avoid misunderstand, we propose a wording refinement for fourth bullet point:¨   * FFS: Whether and how UE Tx beam should/would change without beam lock function during IA when test equipment is holding RAR to achieving UE max output power. |
| Ericsson | The points brought up are valid and should be considered in the work. But how can we decide upon testability before the test method/configuration and scope have not even been agreed? |