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#### **Issue 2-1-1: Scope of test cases**

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| Agreement in RAN4#115:   * + Scenario:     - Normal SCell activation for FR1 and FR2     - Direct SCell activation at SCell addition for FR1     - PUCCH SCell activation for FR1 and FR2     - FFS:       * Direct SCell activation at SCell addition for FR2   + UE capabilities and network configurations:     - Configuration 1: UE supports measValidationReportEMR and measIdleValidityDuration-r18 is configured     - Configuration 2: UE supports measValidationReportReselectionMeasurements and measReselectionValidityDuration-r18 is configured     - FFS:       * Configuration 3: UE supports idleInactiveNR-MeasReport-r16, and neither measIdleValidityDuration-r18 nor measReselectionValidityDuration-r18 is configured and measIdleDuration-r16 hasn’t expired at the moment of initiation of RRC state transition to Connected mode |

* Proposals
  + Direct SCell activation at SCell addition for FR2
    - Consider this scenario: OPPO, CATT, CT, Huawei, CMCC, ZTE, Ericsson, Nokia
    - Do not consider this scenario: N/A
  + Configuration 3
    - Consider this configuration: OPPO, CATT, CT, Huawei, CMCC, ZTE, vivo, Ericsson, Nokia
    - Do not consider this configuration: Apple
* Recommended WF
  + Based on the majority view, define test cases for
    - Direct SCell activation at SCell addition for FR2
    - Configuration 3: UE supports *idleInactiveNR-MeasReport-r16*, and neither *measIdleValidityDuration-r18* nor *measReselectionValidityDuration-r18* is configured and *measIdleDuration-r16* has not expired at the moment of initiation of RRC state transition to CONNECTED mode

#### **Issue 2-1-2: Applicability rules and number of test cases**

* Proposals
  + Option 1: (CATT)
    - No applicability rules are required if the following test case list is agreed. Otherwise, option 1 (i.e., option 2 in this issue) can be a good starting point.

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| **TC No.** | **Scenario** | **Comment** |
| **1** | **Normal SCell activation + FR1 + Configuration 1** | **Non-DRX** |
| **2** | **~~Normal SCell activation + FR2 + Configuration 1~~** | **N/A** |
| **3** | **~~Normal SCell activation + FR1 + Configuration 2~~** | **N/A** |
| **4** | **Normal SCell activation + FR2 + Configuration 2** | **DRX** |
| **5** | **Normal SCell activation + FR1 + Configuration 3** | **Non-DRX** |
| **6** | **~~Normal SCell activation + FR2 + Configuration 3~~** | **N/A** |
| **7** | **~~Direct SCell activation at SCell addition + FR1 + Configuration 1~~** | **N/A** |
| **8** | **Direct SCell activation at SCell addition + FR2 + Configuration 1** | **DRX** |
| **9** | **Direct SCell activation at SCell addition + FR1 + Configuration 2** | **Non-DRX** |
| **10** | **~~Direct SCell activation at SCell addition + FR2 + Configuration 2~~** | **N/A** |
| **11** | **~~Direct SCell activation at SCell addition + FR1 + Configuration 3~~** | **N/A** |
| **12** | **Direct SCell activation at SCell addition + FR2 + Configuration 3** | **DRX** |
| **13** | **PUCCH SCell activation + FR1 + Configuration 1** | **Non-DRX** |
| **14** | **~~PUCCH SCell activation + FR2 + Configuration 1~~** | **N/A** |
| **15** | **~~PUCCH SCell activation + FR1 + Configuration 2~~** | **N/A** |
| **16** | **PUCCH SCell activation + FR2 + Configuration 2** | **DRX** |
| **17** | **~~PUCCH SCell activation + FR1 + Configuration 3~~** | **N/A** |
| **18** | **PUCCH SCell activation + FR2 + Configuration 3** | **Non-DRX** |

* + Option 2a: (Apple)
    - Introduce some applicability rule to reduce testing effort.
    - Agree the following testing applicability rules:
      * Rule 1: for UE supporting Direct SCell activation at SCell addition or PUCCH SCell activation, eEMR-based fast SCell activation for normal SCell activation can be skipped.
      * Rule 2: for UE supporting both Direct SCell activation at SCell addition and PUCCH SCell activation, eEMR-based fast SCell activation for Direct SCell activation at SCell addition can be skipped.
      * Rule 3: for UE which can pass R19 test case for fast SCell activation based on R18 early measurement report, corresponding R18 test case with valid report can be skipped.
  + Option 2b: (Huawei)
    - UE supporting two PUCCH groups, UE is required to pass PUCCH SCell activation TC and skip normal SCell activation TC.
  + Option 2c: (vivo, Qualcomm)
    - If a UE supports Direct SCell Activation or PUCCH SCell Activation, the Normal SCell Activation test case can be skipped.
  + Option 3: (OPPO)
    - For normal SCell activation and PUCCH SCell activation, choose only one set of legacy configurations (e.g., non-DRX, 640ms SCell measurement cycle) to define the test case for fast SCell activation.
  + Option 4: (OPPO, CT)
    - RAN4 to define some applicability rules to reduce the testing efforts.
  + Option 5a: (Ericsson)
    - It is preferred to have a unified test case for all Scell activation type.
  + Option 5b: (Qualcomm)
    - RAN4 to consolidate test cases for EMR capability-related configurations into unified test cases based on SCell activation types (Normal SCell activation, Direct SCell activation, and PUCCH SCell activation)
      * Within each consolidated test case, adapt the test flow to accommodate the specific UE capabilities.
      * Use conditional logic or branching within the test case to handle capability-specific behaviors.
  + Option 6: (Nokia)
    - Consider applicability only if core UE functionality between two test cases / scenarios is the same:
      * *measIdleValidityDuration-r18* and *measReselectionValidityDuration-r18* use different capabilities and carrier lists
      * MAC CE based activation and RRC based activation is good to test separately
      * Different test cases are needed where the core requirement delays differ
    - Discuss which combinations of EMR configurations are tested with each SCell scenario.
* Recommended WF
  + RAN4 to define the following 6 TCs for EMR based SCell activation:
    - In each TC, all three configurations are included with branching method used.

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| **TC No. (CR No.)** | **Scenario** |
| **1** | **Normal SCell activation + FR1 + Configuration 1** |
| **Normal SCell activation + FR1 + Configuration 2** |
| **Normal SCell activation + FR1 + Configuration 3** |
| **2** | **Normal SCell activation + FR2 + Configuration 1** |
| **Normal SCell activation + FR2 + Configuration 2** |
| **Normal SCell activation + FR2 + Configuration 3** |
| **3** | **Direct SCell activation at SCell addition + FR1 + Configuration 1** |
| **Direct SCell activation at SCell addition + FR1 + Configuration 2** |
| **Direct SCell activation at SCell addition + FR1 + Configuration 3** |
| **4** | **Direct SCell activation at SCell addition + FR2 + Configuration 1** |
| **Direct SCell activation at SCell addition + FR2 + Configuration 2** |
| **Direct SCell activation at SCell addition + FR2 + Configuration 3** |
| **5** | **PUCCH SCell activation + FR1 + Configuration 1** |
| **PUCCH SCell activation + FR1 + Configuration 2** |
| **PUCCH SCell activation + FR1 + Configuration 3** |
| **6** | **PUCCH SCell activation + FR2 + Configuration 1** |
| **PUCCH SCell activation + FR2 + Configuration 2** |
| **PUCCH SCell activation + FR2 + Configuration 3** |

* + Discuss the option 2a as a starting point for applicability rules:
    - Agree the following testing applicability rules:
      * Rule 1: for UE supporting Direct SCell activation at SCell addition or PUCCH SCell activation, eEMR-based fast SCell activation for normal SCell activation can be skipped.
      * Rule 2: for UE supporting both Direct SCell activation at SCell addition and PUCCH SCell activation, eEMR-based fast SCell activation for Direct SCell activation at SCell addition can be skipped.
      * Rule 3: for UE which can pass R19 test case for fast SCell activation based on R18 early measurement report, corresponding R18 test case with valid report can be skipped.
    - Note: Any agreed testing applicability rules will be captured in clause A.3.X in 38.133.

#### **Issue 2-1-3: Whether to consider DRX configuration in test cases**

* Proposals
  + Option 1a: (Huawei)
    - The non-DRX mode is able to be considered in the test case for normal SCell activation with Configuration 1.
  + Option 1b: (Ericsson)
    - There is no need to configure DRX cycle for all the test cases.
  + Option 1c: (Qualcomm)
    - RAN4 to not define test cases for DRX.
* Recommended WF
  + Check if it is agreeable:
    - No DRX is configured in all TCs for EMR based fast SCell activation.

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#### **Issue 1-3-1: Detailed UE capability for SCell activation based on EMR**

* Prerequisite feature groups. Discuss the options as follow:
  + Option 1: The UE shall support 39-8 or 39-9 in R18 RAN4 feature list or 18-7 (*idleInactiveNR-MeasReport-r16*) **and on top of such features, idleInactiveNR-MeasBeamReport-r16 is also needed.**
  + ~~Option 4: The UE shall support~~ *~~measValidationReportEMR-r18~~* ~~(per band) and~~ *~~idleInactiveNR-MeasReport-r16~~* ~~(per UE). (QC)~~
    - ~~For FR2, it shall additionally support~~ *~~idleInactiveNR-MeasBeamReport-r16~~* ~~(per UE)~~
    - ~~For EMR-based fast direct SCell activation, the UE shall support~~ *~~directMCG-SCellActivation~~* ~~(per UE with FR1-FR2 DIFF).~~

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| **Features** | **Index** | **Feature group** | **Components** | **Prerequisite feature groups** | **Need for the gNB to know if the feature is supported** | **Applicable to the capability signalling exchange between UEs (V2X WI only)”.** | **Consequence if the feature is not supported by the UE** | **Type (the ‘type’ definition from UE features should be based on the granularity of 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC)** | **Need of FDD/TDD differentiation** | **Need of FR1/FR2 differentiation** | **Capability interpretation for mixture of FDD/TDD and/or FR1/FR2** | **Note** | **Mandatory/Optional** |
| 49. NR\_RRM\_Ph5 | 49-4 | Fast SCell activation based on early measurement report | Supports fast SCell activation based on early measurement reports as specified in TS38.133 clause 8.3.2A |  | Yes | N/A | Fast SCell activation requirements based on early measurement report (as specified in TS 38.133, clause 8.3.2A, 8.3.4, 8.3.12) are not applicable | Per UE | Yes | No | N/A |  | Optional with capability signaling |

#### **Issue 2-1: Test case design for FR2-1 L3 measurement delay reduction by optimizing CSSF**

Recall the previous agreements on TC list for CSSF optimization as follow:

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| **TC list for CSSF optimization solution 1**   * Agreement  |  |  |  |  |  | | --- | --- | --- | --- | --- | | TC index | Scenario | CA/DC Operation mode | Configurations and scopes | Company | | 1 | Aspect 1: SSB based Intra-frequency measurement without MG | 1 TC per operation mode: FR1+FR2 CA and EN-DC, UE is only required to pass one of them | * Non-DRX, * Without SSB time index detection * CA mode: FR1 PCC+ 2 FR2 intra-band SCCs, network configures MOs on both FR2 SCCs and indicates to measure one FR2 SCC * EN-DC: LTE PCC + FR2 PSCC + 1 FR2 intra-band SCCs, network configures MOs on both FR2 SCCs and UE by-default to measure one FR2 PSCC | Nokia | | 2 | Aspect 2: SSB based Inter-frequency measurement without MG | 1 TC per operation mode: FR1+FR2 CA and EN-DC, UE is only required to pass one of them | * Non-DRX, * Without SSB time index detection * CA mode: FR1 PCC+ 2 FR2 intra-band SCCs, network configures MOs on both FR2 SCCs and indicates to measure one FR2 SCC * EN-DC: LTE PCC + FR2 PSCC + 1 FR2 intra-band SCCs, network configures MOs on both FR2 SCCs and UE by-default to measure one FR2 PSCC | Ericsson | | 3 | Aspect 3: Inter-RAT SSB measurement without MG | 1 TC per operation mode: FR1+FR2 CA and EN-DC, UE is only required to pass one of them | * Non-DRX, * Without SSB time index detection * CA mode: FR1 PCC+ 2 FR2 intra-band SCCs, network configures MOs on both FR2 SCCs and indicates to measure one FR2 SCC * EN-DC: LTE PCC + FR2 PSCC + 1 FR2 intra-band SCCs, network configures MOs on both FR2 SCCs and UE by-default to measure one FR2 PSCC | ZTE |   Note: network indication is up to the other RAN2/4 core part discussion. In case network indication for a specific SCC measurement is replaced by other new solution (e.g., SCC selected by UE implementation), use the new solution for CA mode test. |

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| **TC list for CSSF optimization solution 3**  Agreement on Monday:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | TC index | Aspects | CA/DC mode | Detailed configurations and scopes | Company | | 1 | Aspect 1: SSB based Intra-frequency measurement without MG | 1 TC per operation mode:  (1)FR1 only CA: inter-band FR1 CA with 3CCs on 3bands;  (2)FR1 only EN-DC: LTE PCC + FR1 PSCC + inter-band FR1 SCC + inter-band FR1 SCC;  (3)FR1+FR2 CA: FR1 PCC + FR1 inter-band SCC + FR2 SCC.  UE is only required to pass one of them. | Without DRX and without SSB index reporting | Ericsson | | 2 | Aspect 2: SSB based Inter-frequency measurement without MG | 1 TC per operation mode:  (1)FR1 only CA: inter-band FR1 CA with 3CCs on 3bands;  (2)FR1 only EN-DC: LTE PCC + FR1 PSCC + inter-band FR1 SCC + inter-band FR1 SCC;  (3)FR1+FR2 CA: FR1 PCC + FR1 inter-band SCC + FR2 SCC.  UE is only required to pass one of them. | Without DRX and without SSB index reporting | OPPO | | 3 | Aspect 3: Inter-RAT SSB measurement without MG | 1 TC per operation mode:  (1)FR1 only CA: inter-band FR1 CA with 3CCs on 3bands;  (2)FR1 only EN-DC: LTE PCC + FR1 PSCC + inter-band FR1 SCC + inter-band FR1 SCC;  (3)FR1+FR2 CA: FR1 PCC + FR1 inter-band SCC + FR2 SCC.  UE is only required to pass one of them. | Without DRX and without SSB index reporting | Huawei | |

#### **Issue 1-2-1: Inter-frequency MOs without a measurement gap supported by CSSF solution 3**

* Option 1 (Huawei, Apple, QC): Not apply CSSF solution 3 for the case configuring inter-frequency MOs without a measurement gap.
  + Option 1a (MTK): Discuss whether to exclude the 3-searcher enhancement for inter-frequency measurement without MG scenario.
  + Concern: Nokia
* Option 2 (Ericsson, Nokia, ZTE, OPPO): Apply CSSF solution 3 for the case configuring inter-frequency MOs without a measurement gap.
  + Concern: Apple
* Option 3: Not update the core requirements. Meanwhile, not define the test case for: CSSF solution 3 for the case configuring inter-frequency MOs without a measurement gap (OPPO, Nokia, E///, ZTE)
  + Concern:
* Option 4: Not apply CSSF solution 3 for the case configuring inter-frequency MOs without a measurement gap, for some cases. CR: R4-2513478. (HW)

#### **Issue 2-1-3: Cell configurations in TCs for CSSF solution 3**

* Proposal 1 (Huawei): Test set for CSSF solution 3 with the cell configurations including four cells: one PCell, one neighbour Cell of PCC or one inter-RAT E-UTRAN Cell, and two deactivated SCells.
* **Recommended WF**
  + [Moderator]: Check if Proposal 1 is agreeable.
    - Note: Moderator suggests proponents of Proposal 1 to check whether the previous agreements, which is duplicated in the blow, is impacted by Proposal 1:
      * (1)FR1 only CA: inter-band FR1 CA with 3CCs on 3bands;
      * (2)FR1 only EN-DC: LTE PCC + FR1 PSCC + inter-band FR1 SCC + inter-band FR1 SCC;
      * (3)FR1+FR2 CA: FR1 PCC + FR1 inter-band SCC + FR2 SCC.

#### **Issue 2-1-1: Cell configurations in TCs for CSSF solution 1**

* Proposal 1 (Nokia): Test set for CSSF solution 1 with the cell configurations including:
  + At least two carrier frequencies in one FR2 band
  + Event triggered measurement reporting on a neighbour cell on the same frequency with PSCell (in EN-DC) or PCell (in FR2 SA).
* **Recommended WF**
  + [Moderator]: Check if Proposal 1 is agreeable.
    - Note: Moderator understands Proposal 1 doesn’t revoke the previous agreements as duplicated in the below:
      * CA mode: FR1 PCC+ 2 FR2 intra-band SCCs, network configures MOs on both FR2 SCCs and indicates to measure one FR2 SCC
      * EN-DC: LTE PCC + FR2 PSCC + 1 FR2 intra-band SCCs, network configures MOs on both FR2 SCCs and UE by-default to measure one FR2 PSCC

#### **Issue 2-1-2: Network indication in TCs for CSSF solution 1**

* Option1 (Nokia, Ericsson): Define sub-test to verify measurement delay with enhanced CSSF based on network indication.
* Option 2 (MTK): Not need to introduce additional sub-test to verify measurement delay with enhanced CSSF based on network indication.
* **Recommended WF**
  + [Moderator]: Discuss Option 1 and Option 2.