**3GPP TSG-RAN WG2 Meeting #125 R2-24xxxxx**

**Athens, Greece, 26th February – 1st March, 2024**

**Agenda Item: 7.4.1.4**

**Source: Huawei, HiSilicon**

**Title: Postponed issue list for LTM MAC corrections**

**Document for: For information**

# 1 Postponed issue list

* Issue 1: DRX and measurement gaps during rach-less LTM switch [Technical Issue]
	+ Confirm the intention that DRX should neither delay the completion of the LTM reconfiguration nor incur addition explicit RRC reconfigurations.
	+ Postpone the discussion on the application of measurement gap and DRX configuration may be applied, during RACH-less LTM cell switch.
* Issue 2: cg-LTM-RetransmissionTimer [Technical/Implementation Issue]
	+ Proposal 7: Agree on the intention from P1/2 in [R2-2400880](file:///C%3A%5CUsers%5Cmtk65284%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2_RL2%5CRAN2%5CDocs%5CR2-2400880.zip)/[R2-2401085](file:///C%3A%5CUsers%5Cmtk65284%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2_RL2%5CRAN2%5CDocs%5CR2-2401085.zip) (details to be reviewed via post email).
	+ The agreement is postponed to be captured in the next meeting, since there is the parallel post email discussion on [POST125][028][RACH-less] CR to 38.321, which is doing modification to the cg-LTM-RetransmissionTimer at the same time.
* Issue 3: LTM MAC CE with Msg1 repetition for eRedCap in CovEnh WI [Implementation Issue]
	+ The parallel email discussion “[POST125][805][CE\_enh] Updated MAC CR” is capturing the “eRedCap+Msg1 repetition---merge the TP from R2-2401774”
	+ We may need to do the similar change for the case of “CFRA indicated by LTM MAC CE with Msg1 repetition” to eRedCap, in the next meeting.
* Issue 4: Need of “UL TCI state ID” field in LTM cell switch MAC CE. [Technical Issue]
	+ Companies are encouraged to check if this “UL TCI state ID” field is really needed.
	+ Since there is UL measurement for the source cell to select the UL TCI state.
	+ Please only bring contribution if you see no need of this field. Otherwise, we don’t need to discuss this at all.
* Issue 5: How to implement the “Aim to support also MSG1 repetition for CFRA. Determine the impact offline. ” [Implementation Issue]
	+ Option 1: Msg1 repetition number is indicated by the LMT Cell switch MAC CE (See the TP discussed in [Post125][515][feMob] 38321 as in section 2)
	+ Option 2: The Msg1 repetition number is configured in reconfigurationWithSync as the same as R18 CE.
* Issue 6: CFRA indicated by LTM MAC CE fallback to RRC configured CFRA or fallback to CBRA [Technical Issue]
	+ In the current MAC version, the MAC CE based CFRA will fallback to the RRC configured CFRA (e.g. RACH-ConfigDedicated in ReconfigurationWithSync) if the SSB indicated by LTM Cell switch MAC CE whose RSRP is not above the threshold
	+ This may be problematic since one motivation of introducing MAC CE based CFRA is for saving the CFRA resources by sharing a CFRA resource pool among different UEs. If NW indicates CFRA by MAC CE, the RRC configured CFRA may become “contention” RACH resource. If UE uses this “RRC configured CFRA” but actually there could be contention, the MAC procedure may not handle this well (e.g. Msg3 UL grant may have collision among UEs)
	+ Potential TP is given in section 3, if RAN2 agree that CFRA indicated by LTM MAC CE will fallback to CBRA.

# 2 TP for Msg1 repetition

### 5.1.1b Selection of the set of Random Access resources for the Random Access procedure

The MAC entity shall:

1> if the BWP selected for Random Access procedure is configured with both set(s) of Random Access resources with *msg3-Repetitions* set to *true* and set(s) of Random Access resources without *msg3-Repetitions* set to *true* and the RSRP of the downlink pathloss reference is less than *rsrp-ThresholdMsg3*; or

1> if the BWP selected for Random Access procedure is only configured with the set(s) of Random Access resources with *msg3-Repetitions* set to *true*:

2> assume Msg3 repetition is applicable for the current Random Access procedure.

1> else:

2> assume Msg3 repetition is not applicable for the current Random Access procedure.

1> if contention-free Random Access Resources have been provided for this Random Access procedure in LTM Cell Switch Command MAC CE and a Msg1 repetition number is indicated in LTM Cell Switch Command MAC CE:

2> assume Msg1 repetition is applicable and Msg1 repetition number applicable for the current Random Access procedure is the Msg1 repetition number indicated in LTM Cell Switch Command MAC CE.

1> else if contention-free Random Access Resources have been provided for this Random Access procedure and a Msg1 repetition number is indicated in *rach-ConfigDedicated*:

2> assume Msg1 repetition is applicable and Msg1 repetition number applicable for the current Random Access procedure is the Msg1 repetition number indicated in *rach-ConfigDedicated*.

1> else if contention free Random Access Resources have not been provided for this Random Access procedure and the BWP selected for the Random Access procedure is configured with set(s) of Random Access resources with *msg1-Repetitions* set to *true* and set(s) of Random Access resources without *msg1-Repetitions* set to *true*:

2> if the BWP selected for the Random Access procedure is configured with set(s) of Random Access resources associated with Msg1 repetition number 8 and the RSRP of the downlink pathloss reference is less than *rsrp-ThresholdMsg1-RepetitionNum8*:

3> assume Msg1 repetition is applicable and Msg1 repetition number applicable for the current Random Access procedure includes 8.

2> if the BWP selected for the Random Access procedure is configured with set(s) of Random Access resources associated with Msg1 repetition number 4 and the RSRP of the downlink pathloss reference is less than *rsrp-ThresholdMsg1-RepetitionNum4*:

3> assume Msg1 repetition is applicable and Msg1 repetition number applicable for the current Random Access procedure includes 4.

2> if the BWP selected for the Random Access procedure is configured with set(s) of Random Access resources associated with Msg1 repetition number 2 and the RSRP of the downlink pathloss reference is less than *rsrp-ThresholdMsg1-RepetitionNum2*:

3> assume Msg1 repetition is applicable and Msg1 repetition number applicable for the current Random Access procedure includes 2.

2> else if the RSRP of the downlink pathloss reference is not less than any configured *rsrp-ThresholdMsg1-RepetitionNumX*:

3> assume Msg1 repetition is not applicable for the current Random Access procedure.

1> else ifthe BWP selected for Random Access procedure is configured only with Random Access resources with *msg1-Repetitions* set to *true*:

2> assume Msg1 repetition is applicable for the current Random Access procedure;

2> if at least one of *rsrp-ThresholdMsg1-RepetitionNumX* is configured:

3> if *rsrp-ThresholdMsg1-RepetitionNum8* is configured and the RSRP of the downlink pathloss reference is less than *rsrp-ThresholdMsg1-RepetitionNum8*;

4> assume Msg1 repetition number applicable for the current Random Access procedure includes 8.

3> if *rsrp-ThresholdMsg1-RepetitionNum4* is configured and the RSRP of the downlink pathloss reference is less than *rsrp-ThresholdMsg1-RepetitionNum4*:

4> assume Msg1 repetition number applicable for the current Random Access procedure includes 4.

3> if *rsrp-ThresholdMsg1-RepetitionNum2* is configured and the RSRP of the downlink pathloss reference is less than *rsrp-ThresholdMsg1-RepetitionNum2*:

4> assume Msg1 repetition number applicable for the current Random Access procedure includes 2.

3> else if the RSRP of the downlink pathloss reference is not less than any configured *rsrp-ThresholdMsg1-RepetitionNumX*:

4> assume Msg1 repetition number applicable for the current Random Access procedure is the lowest Msg1 repetition number configured for this BWP.

2> else (none of *rsrp-ThresholdMsg1-RepetitionNumX* is configured):

3> assume Msg1 repetition number applicable for the current Random Access procedure is the Msg1 repetition number that configured for this BWP.

NOTE 1: Void.

1> if neither contention-free Random Access Resources nor Random Access Resources for SI request have been provided for this Random Access procedure and one or more of the features including (e)RedCap and/or Slicing and/or SDT and/or MSG3 repetition and/or MSG1 repetition is applicable for this Random Access procedure:

NOTE 2: The applicability of SDT is determined by MAC entity according to clause 5.27. The applicability of *NSAG-ID* is determined by upper layers when the Random Access procedure is initiated. The applicability of (e)RedCap is also determined by upper layers when Random Access procedure is initiated and it is applicable to the Random Access procedures initiated by PDCCH orders and any Random Access procedure initiated by the MAC entity.

NOTE 3: SDT is not applicable for the Random Access procedure initiated by upper layers for MT-SDT.

2> if none of the sets of Random Access resources are available for any feature applicable to the current Random Access procedure (as specified in clause 5.1.1c):

3> select the set(s) of Random Access resources that are not associated with any feature indication (as specified in clause 5.1.1c) for this Random Access procedure.

2> else if there is one set of Random Access resources available which can be used for indicating all features triggering this Random Access procedure:

3> select this set of Random Access resources for this Random Access procedure.

2> else if there are more than one set of Random Access resources available which can be used for indicating all features triggering this Random Access procedure and Msg1 repetition is applicable for this Random Access procedure:

3> select the set of Random Access resources that associated with highest repetition number among the sets of Random Access resources.

2> else (i.e. there are one or more sets of Random Access resources available that are configured with indication(s) for a subset of all features triggering this Random Access procedure):

3> select a set of Random Access resources from the available set(s) of Random Access resources based on the priority order indicated by upper layers as specified in clause 5.1.1d for this Random Access Procedure.

1> else if contention-free Random Access Resources with Msg1 repetition have been provided for this Random Access procedure in LTM Cell Switch Command MAC CE and Msg1 repetition number is indicated in LTM Cell Switch Command MAC CE, and RedCap is applicable for the current Random Access procedure:

2> select the set of Random Access resources that is only configured with RedCap indication and Msg1 repetition indication and associated with the indicated Msg1 repetition number for this Random Access procedure.

1> else if contention-free Random Access Resources with Msg1 repetition have been provided for this Random Access procedure and Msg1 repetition number is indicated in *rach-ConfigDedicated*, and RedCap is applicable for the current Random Access procedure:

2> select the set of Random Access resources that is only configured with RedCap indication and Msg1 repetition indication and associated with the indicated Msg1 repetition number for this Random Access procedure.

1> else if contention-free Random Access Resources have been provided for this Random Access procedure and RedCap is applicable for the current Random Access procedure and there is one set of Random Access resources available that is only configured with RedCap indication; or

1> else if contention-free Random Access Resources have been provided for this Random Access procedure and eRedCap is applicable for the current Random Access procedure and there is one set of Random Access resources available that is only configured with eRedCap indication; or

1> else if contention-free Random Access Resources have been provided for this Random Access procedure and eRedCap is applicable for the current Random Access procedure and there is no set of Random Access resources available that is only configured with eRedCap indication and there is one set of Random Access resources available that is only configured with RedCap indication:

2> select this set of Random Access resources for this Random Access procedure.

1> else:

2> if the Random Access procedure is initiated by PDCCH order with DCI *PRACH association indicator* field set to 1 and *SSB-MTC-AdditionalPCI* is configured by upper layers, as specified in clause 7.3.1.2.1 of TS 38.212 [9]:

3> select the set of Random Access resources corresponding to the active *additionalPCI*.

2> else if the Random Access procedure is initiated by PDCCH order for an LTM candidate cell:

3> select the set of Random Access resources corresponding to the field *Cell indicator* in PDCCH order.

2> else if contention-free Random Access Resources with Msg1 repetition have been provided for this Random Access procedure in LTM Cell Switch Command MAC CE, and Msg1 repetition number is indicated in LTM Cell Switch Command MAC CE:

3> select the set of Random Access resources that is only configured with Msg1 repetition indication and associated with the indicated Msg1 repetition number for this Random Access procedure.

2> else if contention-free Random Access Resources with Msg1 repetition have been provided for this Random Access procedure, and Msg1 repetition number is indicated in *rach-ConfigDedicated*:

3> select the set of Random Access resources that is only configured with Msg1 repetition indication and associated with the indicated Msg1 repetition number for this Random Access procedure.

2> else if the Random Access procedure was initiated for SI request and Random Access Resources associated with Msg1 repetition for SI request and Msg1 repetition number have been provided for this Random Access procedure:

3> select the set of Random Access resources that is only configured with Msg1 repetition indication and associated with the indicated Msg1 repetition number for this Random Access procedure.

2> else:

3> select the set of Random Access resources that are not associated with any feature indication (as specified in clause 5.1.1c) for the current Random Access procedure.

#### 6.1.3.75 LTM Cell Switch Command MAC CE

The LTM Cell Switch Command MAC CE is identified by MAC subheader with eLCID as specified in Table 6.2.1-1b. It has a variable size with following fields (Figure 6.1.3.75-1):

- R: Reserved bit, set to 0;

- Target Configuration ID: This field indicates the index of candidate target configuration to apply for LTM cell switch, corresponding to *ltm-CandidateId* minus 1as specified in TS 38.331 [5]. The length of the field is 3 bits;

- Timing Advance Command: This field indicates whether the TA is valid for the LTM target cell (i.e. the SpCell corresponding to the target configuration indicated by Target Configuration ID field). If the value of this field is set to FFF, this field indicates that no valid timing adjustment is available for the PTAG of the LTM target cell; otherwise, this field indicates the index value *TA* used to control the amount of timing adjustment that the MAC entity has to apply in TS 38.213 [6], and that the UE can skip the Random Access procedure for this LTM cell switch. The length of the field is 12 bits. If *tag-Id-ptr* is configured for the TCI state indicated by the TCI state ID field in the LTM target cell and *tag-Id-ptr* is set to value *n1*, this field indicates the TA for the TAG indicated by the *tag2-Id* of the LTM target cell; otherwise, this field indicates the TA for the TAG indicated by the *tag-id* of the LTM target cell;

- TCI state ID: This field indicates and activates the TCI state for the LTM target cell (i.e. the SpCell of the target configuration indicated by the Target Configuration ID field). The TCI state is identified by *TCI-StateId* in *ltm-DL-OrJointTCI-StateToAddModList* as specified in TS 38.331 [5]. If the value of *unifiedTCI-StateType* in the configuration indicated by Target Configuration ID fieldis *joint*, this field is for joint TCI state, otherwise, this field is for downlink TCI state. The length of the field is 7 bits;

- UL TCI state ID: This field indicates and activates the uplink TCI state for the LTM target cell (i.e. the SpCell of the target configuration indicated by the Target Configuration ID field). The most significant bits of UL TCI state ID are considered as reserved bits and the remainder 6 bits indicate the *TCI-UL-StateId* in *ltm-UL-TCI-StatesToAddModList* as specified in TS 38.331 [5]. This field is included if the value of *unifiedTCI-StateType* in the configuration indicated by Target Configuration ID fieldis *separate*. The length of the field is 8 bits;

- C: This field indicates the presence of the contention-free Random Access Resources fields. If the value of this field is set to 1, the following fields are present: including Random Access Preamble index field, S/U field, SS/PBCH index field, PRACH Mask index field and Repetition number field. If the value of this field is set to 0, Random Access Preamble index field, SS/PBCH index field, PRACH Mask index field and Repetition number field are absent, and S/U field is considered as Reserved field.

- S/U: This field indicates which UL carrier to transmit the PRACH of the contention-free Random Access Resources. If the value of this field is set to 1, SUL is used; otherwise, NUL is used. The length of the field is 1 bit;

- Random Access Preamble index: This field indicates the Random Access Preamble index of the contention-free Random Access Resources. This field should not be set to 0b000000. The length of the field is 6 bits;

- SS/PBCH index: This field indicates the SS/PBCH that shall be used to determine the RACH occasion for the PRACH transmission of the contention-free Random Access Resources. The length of the field is 6 bits;

- PRACH Mask index: This field indicates the RACH occasion(s) associated with the SS/PBCH indicated by "SS/PBCH index" for the PRACH transmission of the contention-free Random Access Resources. It indicates a subset of RACH occasion(s) from the *rach-ConfigDedicated* for the UL carrier (indicated by S/U field), if provided; otherwise it indicates a subset of RACH occasion(s) from the *rach-ConfigCommon* for the UL carrier (indicated by S/U field) in the UL BWP configuration of *firstActiveUplinkBWP-Id* as specified in TS 38.331 [5]. The length of the field is 4 bits;

- Repetition number: This field indicates the Msg1 repetition number to be applied to the contention-free Random Access. If this field is set to 0, Msg1 repetition number does not apply. If this field is set to 1, the Msg1 repetition number is 2. If this field is set to 2, the Msg1 repetition number is 4. If this field is set to 3, the Msg1 repetition number is 8. The length of the field is 2 bits.

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Figure 6.1.3.75-1: LTM Cell Switch Command MAC CE

NOTE: If UE receives the LTM Cell Switch Command MAC CE with Target Configuration ID as invalid, as specified in TS 38.331 [5], the procedue of handling LTM Cell Switch Command MAC CE in clause 5.18.35 does not apply.

# 3 TP for CFRA by MAC CE fallback to CBRA

### 5.1.2 Random Access Resource selection

If the selected *RA\_TYPE* is set to *4-stepRA*, the MAC entity shall:

1> if the Random Access procedure was initiated for SpCell beam failure recovery (as specified in clause 5.17); and

1> if the *beamFailureRecoveryTimer* (in clause 5.17) is either running or not configured; and

1> if the contention-free Random Access Resources for beam failure recovery request associated with any of the SSBs and/or CSI-RSs have been explicitly provided by RRC; and

1> if at least one of the SSBs with SS-RSRP above *rsrp-ThresholdSSB* amongst the SSBs in *candidateBeamRSList* or the CSI-RSs with CSI-RSRP above *rsrp-ThresholdCSI-RS* amongst the CSI-RSs in *candidateBeamRSList* is available:

2> select an SSB with SS-RSRP above *rsrp-ThresholdSSB* amongst the SSBs in *candidateBeamRSList* or a CSI-RS with CSI-RSRP above *rsrp-ThresholdCSI-RS* amongst the CSI-RSs in *candidateBeamRSList*;

2> if CSI-RS is selected, and there is no *ra-PreambleIndex* associated with the selected CSI-RS:

3> set the *PREAMBLE\_INDEX* to a *ra-PreambleIndex* corresponding to the SSB in *candidateBeamRSList* which is quasi-colocated with the selected CSI-RS as specified in TS 38.214 [7].

2> else:

3> set the *PREAMBLE\_INDEX* to a *ra-PreambleIndex* corresponding to the selected SSB or CSI-RS from the set of Random Access Preambles for beam failure recovery request.

1> else if the *ra-PreambleIndex* has been explicitly provided by PDCCH; and

1> if the *ra-PreambleIndex* is not 0b000000:

2> set the *PREAMBLE\_INDEX* to the signalled *ra-PreambleIndex*;

2> select the SSB signalled by PDCCH.

1> else if the *ra-PreambleIndex* has been explicitly provided by an LTM Cell Switch Command MAC CE and the signalled SSB with SS-RSRP above *rsrp-ThresholdSSB* is available:

2> set the *PREAMBLE\_INDEX* to the signalled *ra-PreambleIndex*;

2> select the SSB signalled by the LTM Cell Switch Command MAC CE.

1> else if the contention-free Random Access Resources associated with SSBs have been explicitly provided in *rach-ConfigDedicated*, and if the *ra-PreambleIndex* has not been explicitly provided by an LTM Cell Switch Command MAC CE*,* and at least one SSB with SS-RSRP above *rsrp-ThresholdSSB* amongst the associated SSBs is available:

2> select an SSB with SS-RSRP above *rsrp-ThresholdSSB* amongst the associated SSBs;

2> set the *PREAMBLE\_INDEX* to a *ra-PreambleIndex* corresponding to the selected SSB.

1> else if the contention-free Random Access Resources associated with CSI-RSs have been explicitly provided in *rach-ConfigDedicated*, and if the *ra-PreambleIndex* has not been explicitly provided by an LTM Cell Switch Command MAC CE*,* and at least one CSI-RS with CSI-RSRP above *rsrp-ThresholdCSI-RS* amongst the associated CSI-RSs is available:

2> select a CSI-RS with CSI-RSRP above *rsrp-ThresholdCSI-RS* amongst the associated CSI-RSs;

2> set the *PREAMBLE\_INDEX* to a *ra-PreambleIndex* corresponding to the selected CSI-RS.

1> else if the Random Access procedure was initiated for SI request (as specified in TS 38.331 [5]); and

1> if the Random Access Resources for SI request have been explicitly provided by RRC:

2> if at least one of the SSBs with SS-RSRP above *rsrp-ThresholdSSB* is available:

3> select an SSB with SS-RSRP above *rsrp-ThresholdSSB*.

2> else:

3> select any SSB.

2> select a Random Access Preamble corresponding to the selected SSB, from the Random Access Preamble(s) determined according to *ra-PreambleStartIndex* as specified in TS 38.331 [5];

2> set the *PREAMBLE\_INDEX* to selected Random Access Preamble.

1> else (i.e. for the contention-based Random Access preamble selection):

2> if at least one of the SSBs with SS-RSRP above *rsrp-ThresholdSSB* is available:

3> select an SSB with SS-RSRP above *rsrp-ThresholdSSB*.

2> else:

3> select any SSB.

2> if the *RA\_TYPE* is switched from *2-stepRA* to *4-stepRA*:

3> if a Random Access Preambles group was selected during the current Random Access procedure:

4> select the same group of Random Access Preambles as was selected for the 2-step RA type.

3> else:

4> if Random Access Preambles group B is configured; and

4> if the transport block size of the MSGA payload configured in the *rach-ConfigDedicated* corresponds to the transport block size of the MSGA payload associated with Random Access Preambles group B:

5> select the Random Access Preambles group B.

4> else:

5> select the Random Access Preambles group A.

2> else if Msg3 buffer is empty:

3> if Random Access Preambles group B is configured:

4> if the potential Msg3 size (UL data available for transmission plus MAC subheader(s) and, where required, MAC CEs) is greater than *ra-Msg3SizeGroupA* and the pathloss is less than *PCMAX* (of the Serving Cell performing the Random Access Procedure) – *preambleReceivedTargetPower* – *msg3-DeltaPreamble* – *messagePowerOffsetGroupB*; or

4> if the Random Access procedure was initiated for the CCCH logical channel and the CCCH SDU size plus MAC subheader is greater than *ra-Msg3SizeGroupA*:

5> select the Random Access Preambles group B.

4> else:

5> select the Random Access Preambles group A.

3> else:

4> select the Random Access Preambles group A.

2> else (i.e. Msg3 is being retransmitted):

3> select the same group of Random Access Preambles as was used for the Random Access Preamble transmission attempt corresponding to the first transmission of Msg3.

2> select a Random Access Preamble randomly with equal probability from the Random Access Preambles associated with the selected SSB and the selected Random Access Preambles group;

2> set the *PREAMBLE\_INDEX* to the selected Random Access Preamble.

1> if the Random Access procedure was initiated for SI request (as specified in TS 38.331 [5]); and

1> if *ra-AssociationPeriodIndex* and *si-RequestPeriod* are configured:

2> determine the next available PRACH occasion from the PRACH occasions corresponding to the selected SSB in the association period given by *ra-AssociationPeriodIndex* in the *si-RequestPeriod* permitted by the restrictions given by the *ra-ssb-OccasionMaskIndex* if configured (the MAC entity shall select a PRACH occasion randomly with equal probability amongst the consecutive PRACH occasions according to clause 8.1 of TS 38.213 [6] corresponding to the selected SSB).

1> else if an SSB is selected above:

2> if the set of Random Access resources associated with Msg1 repetition is selected for this Random Access procedure:

3> determine the next available set of PRACH occasions (as specified in TS 38.213 [6]) for the Msg1 repetition number applicable for this Random Access procedure corresponding to the selected SSB, permitted by the restrictions given by the *ra-ssb-OccasionMaskIndex* if configured, or *ssb-SharedRO-MaskIndex* if configured (the MAC entity shall select a set of PRACH occasions randomly with equal probability amongst the consecutive PRACH occasions according to clause 8.1 of TS 38.213 [6] regardless the FR2 UL gap, corresponding to the selected SSB and selected Msg1 repetition number for this Random Access procedure; the MAC entity may take into account the possible occurrence of measurement gaps and MUSIM gaps when determining the next available set of PRACH occasions corresponding to the selected SSB).

2> else:

3> determine the next available PRACH occasion from the PRACH occasions corresponding to the selected SSB permitted by the restrictions given by the *ra-ssb-OccasionMaskIndex* if configured, or *ssb-SharedRO-MaskIndex* if configured, or indicated by PDCCH, or indicated by the LTM Cell Switch Command MAC CE (the MAC entity shall select a PRACH occasion randomly with equal probability amongst the consecutive PRACH occasions according to clause 8.1 of TS 38.213 [6] regardless the FR2 UL gap, corresponding to the selected SSB; the MAC entity may take into account the possible occurrence of measurement gaps and MUSIM gaps when determining the next available PRACH occasion corresponding to the selected SSB).

1> else if a CSI-RS is selected above:

2> if there is no contention-free Random Access Resource associated with the selected CSI-RS:

3> determine the next available PRACH occasion from the PRACH occasions, permitted by the restrictions given by the *ra-ssb-OccasionMaskIndex* if configured, corresponding to the SSB in *candidateBeamRSList* which is quasi-colocated with the selected CSI-RS as specified in TS 38.214 [7] (the MAC entity shall select a PRACH occasion randomly with equal probability amongst the consecutive PRACH occasions according to clause 8.1 of TS 38.213 [6] regardless the FR2 UL gap, corresponding to the SSB which is quasi-colocated with the selected CSI-RS; the MAC entity may take into account the possible occurrence of measurement gaps and MUSIM gaps when determining the next available PRACH occasion corresponding to the SSB which is quasi-colocated with the selected CSI-RS).

2> else:

3> determine the next available PRACH occasion from the PRACH occasions in *ra-OccasionList* corresponding to the selected CSI-RS (the MAC entity shall select a PRACH occasion randomly with equal probability amongst the PRACH occasions occurring simultaneously but on different subcarriers regardless the FR2 UL gap, corresponding to the selected CSI-RS; the MAC entity may take into account the possible occurrence of measurement gaps and MUSIM gaps when determining the next available PRACH occasion corresponding to the selected CSI-RS).

1> perform the Random Access Preamble transmission procedure (see clause 5.1.3).

NOTE 1: When the UE determines if there is an SSB with SS-RSRP above *rsrp-ThresholdSSB* or a CSI-RS with CSI-RSRP above *rsrp-ThresholdCSI-RS*, the UE uses the latest unfiltered L1-RSRP measurement.

NOTE 2: Void.

NOTE 3: If an (e)RedCap UE in RRC\_IDLE or RRC\_INACTIVE mode is configured with a BWP indicated by *initialDownlinkBWP-RedCap* which is not associated with any SSB, SS-RSRP measurement is performed based on the SSB associated with the BWP indicated by *initialDownlinkBWP*. If a RedCap UE in RRC\_INACTIVE mode is configured with SDT and with a BWP indicated by *initialDownlinkBWP-RedCap* which is associated with NCD-SSB, SS-RSRP measurement can also be performed based on this NCD-SSB during SDT.

NOTE 4: If an (e)RedCap UE in RRC\_IDLE or RRC\_INACTIVE mode is configured with a BWP indicated by *initialDownlinkBWP-RedCap* which is not associated with any SSB for RACH, it is up to the UE implementation to perform a new RSRP measurements before Msg1/MsgA retransmission.