**3GPP TSG- Meeting #**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
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| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In RAN4#110-bis the following CRs were endorsed:  • R4-2406487 draftCR on requirements for BWP without restriction  • R4-2406492 CR for bandwidth part operation without restriction  In RAN4#111 the following CRs were endorsed:  • R4-2410371 (NR\_BWP\_wor-Core) draft CR on condition of intra-band SSB-based measurements without measurement gap for Option C [R18 CatF]  • R4-2409258 draftCR on requirements for BWP without restriction | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Update the applicability of NCD-SSB related requirements such that they also apply for activated PSCell.  Update B-1-1 related requirements in section 9.5 and 9.8.  Added one case for Option C to the requirement of intra-frequency SSB based measurements without measurement gaps.  Extend the applicability of SSB based CBD in clause 8.5.5 to SSB outside UE active BWP if UE supports option B-1-1. The change is same as that to clause 8.5.2 for SSB based BFD. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The core requirements are incomplete. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.1, 8.5, 9.2, 9.5, 9.8 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<Start of Change 1>

### 8.1.1 Introduction

The requirements in clause 8.1 apply for radio link monitoring on:

- PCell in SA NR, NR-DC and NE-DC operation mode,

- PCell operating with less than 5MHz BW in SA NR (single carrier) operation mode,

- PSCell in NR-DC and EN-DC operation mode,

- Deactivated PSCell in NR-DC and EN-DC operation mode, when configured.

The UE shall monitor the downlink radio link quality based on the reference signal configured as RLM-RS resource(s) in order to detect the downlink radio link quality of the PCell, PSCell and deactivated PSCell if configured with *bfd-and-RLM* with value *true* as specified in TS 38.331 [2]. The configured RLM-RS resources can be all SSBs, or all CSI-RSs, or a mix of SSBs and CSI-RSs. [The configured RLM-RSs can be from the same or different TRPs.] UE is not required to perform RLM outside the active DL BWP unless the UE supports *bwpOperationMeasWithoutInterrupt-r18*, provided that the SSB is within the configured UE-specific CBW. For UE supporting *ncd-SSB-BWP-Wor-r18*, the SSB and SMTC in this section applies for both CD-SSB and NCD-SSB if it is not additional specified. If SSB in the active DL BWP of serving cell *i* is NCD-SSB, for serving cell *i* the requirements in clause 8.1 apply provided that serving cell *i* is PCell or activated PSCell.

On each RLM-RS resource, the UE shall estimate the downlink radio link quality and compare it to the thresholds Qout and Qin for the purpose of monitoring downlink radio link quality of the cell.

When a CORESET that the UE uses for monitoring PDCCH includes two TCI states and the UE is provided *sfnSchemePdcch* set to 'sfnSchemeA' or 'sfnSchemeB', the UE shall estimate a single downlink radio link quality to derive single SNR and compare it to the single thresholds Qout and Qin for the purpose of monitoring downlink radio link quality of the cell(s). How to compute the single SNR based on two active TCI states is up to UE implementation.

The threshold Qout is defined as the level at which the downlink radio link cannot be reliably received and shall correspond to the out-of-sync block error rate (BLERout) as defined in Table 8.1.1-1. For SSB based radio link monitoring, Qout\_SSB is derived based on the hypothetical PDCCH transmission parameters listed in Table 8.1.2.1-1. For CSI-RS based radio link monitoring, Qout\_CSI-RS is derived based on the hypothetical PDCCH transmission parameters listed in Table 8.1.3.1-1.

The threshold Qin is defined as the level at which the downlink radio link quality can be received with significantly higher reliability than at Qout and shall correspond to the in-sync block error rate (BLERin) as defined in Table 8.1.1-1. For SSB based radio link monitoring, Qin\_SSB is derived based on the hypothetical PDCCH transmission parameters listed in Table 8.1.2.1-2. For CSI-RS based radio link monitoring, Qin\_CSI-RS is derived based on the hypothetical PDCCH transmission parameters listed in Table 8.1.3.1-2.

The out-of-sync block error rate (BLERout) and in-sync block error rate (BLERin) are determined from the network configuration via parameter *rlmInSyncOutOfSyncThreshold* signalled by higher layers. When UE is not configured with *rlmInSyncOutOfSyncThreshold* from the network, UE determines out-of-sync and in-sync block error rates from Configuration #0 in Table 8.1.1-1 by default. All requirements in clause 8.1 are applicable for BLER Configuration #0 in Table 8.1.1-1.

Table 8.1.1-1: Out-of-sync and in-sync block error rates

|  |  |  |
| --- | --- | --- |
| Configuration | BLERout | BLERin |
| 0 | 10% | 2% |

UE shall be able to monitor up to NRLM RLM-RS resources of the same or different types in each corresponding carrier frequency range, depending on a maximum number  of SSBs per half frame according to TS 38.213 [3], where NRLM is specified in Table 8.1.1-2 according TS 38.213 [3], and meet the requirements as specified in clause 8.1. UE is not required to meet the requirements in clause 8.1 if RLM-RS is not configured and no TCI state for PDCCH is activated.

Table 8.1.1-2: Maximum number of RLM-RS resources NRLM

|  |  |  |
| --- | --- | --- |
| Carrier frequency range of PCell/PSCell |  | Maximum number of RLM-RS resources, NRLM |
| FR1, ≤ 3 GHzNote | 4 | 2 |
| FR1, > 3 GHzNote | 8 | 4 |
| FR2 | 64 | 8 |
| NOTE: For unpaired spectrum operation with Case C - 30 kHz SCS, 3GHz is replaced by 1.88GHz, as specified in clause 4.1 in TS 38.213 [3]. | | |

<End of Change 1>

<Start of Change 2>

### 8.1.4 Minimum requirement at transitions

When the UE transitions between DRX and no DRX or when DRX cycle periodicity changes, for each RLM-RS resource, for a duration of time equal to the evaluation period corresponding to the second mode after the transition occurs, the UE shall use an evaluation period that is no less than the minimum of evaluation period corresponding to the first mode and the second mode. Subsequent to this duration, the UE shall use an evaluation period corresponding to the second mode for each RLM-RS resource. This requirement shall be applied to both out-of-sync evaluation and in-sync evaluation of the monitored cell.

When the UE transitions from a first configuration of RLM resources to a second configuration of RLM resources that is different from the first configuration, for each RLM resource present in the second configuration, for a duration of time equal to the evaluation period corresponding to the second configuration after the transition occurs, the UE shall use an evaluation period that is no less than the minimum of evaluation periods corresponding to the first configuration and the second configuration. Subsequent to this duration, the UE shall use an evaluation period corresponding to the second configuration for each RLM resource present in the second configuration. This requirement shall be applied to both out-of-sync evaluation and in-sync evaluation of the monitored cell.

When the UE transitions from a first configuration of active TCI state of the CORESET to a second configuration of active TCI state of the CORESET, for each CSI-RS for RLM present in the second configuration, the UE shall use an evaluation period corresponding to the second configuration from the time of transition. This requirement shall be applied to both out-of-sync evaluation and in-sync evaluation of the monitored cell.

For UE supporting *ncd-SSB-BWP-Wor-r18*, when the UE transitions between RLM CD-SSB resource and RLM NCD-SSB resource due to BWP switching or due to SCG activation or deactivation during one evaluation period, the UE shall use an evaluation period that is the maximum of the evaluation periods corresponding to the first SSB type and the second SSB type after the BWP switching or the SCG activation or deactivation. Subsequent to this duration, the UE shall use an evaluation period corresponding to the second SSB type for each RLM-RS resource.

<End of Change 2>

<Start of Change 3>

8.5.1 Introduction

The UE shall assess the downlink radio link quality of a serving cell based on the reference signal in the set  as specified in TS 38.213 [3] in order to detect beam failure on:

- PCell in SA, NR-DC, or NE-DC operation mode,

- PSCell in NR-DC and EN-DC operation mode,

- SCell in SA, NR-DC, NE-DC or EN-DC operation mode,

- Deactivated PSCell in NR-DC and EN-DC operation mode

*RLM* with value *true*) can be periodic CSI-RS resources and/or SSBs. RS resource configuration in the set  on SCell shall be periodic CSI-RS. UE is not required to perform beam failure detection outside the active DL BWP unless the UE supports *bwpOperationMeasWithoutInterrupt-r18*, provided that the SSB is within the configured UE-specific CBW. UE is not required to meet the requirements in clause 8.5.2 and 8.5.3 if UE does not have set . UE is not required to perform beam failure detection on a deactivated SCell, and also not required to perform beam failure detection on resources which is implicitly configured for a deactivated SCell. When more than 2 periodic CSI-RS resources on a CC are configured in the set  for current SCell or implicitly configured in the set  for other SCell, it is up to UE implementation to select two of CSI-RS resources in active BWP in current CC to perform beam failure detection. UE is not required to perform beam failure detection on a SCell on which  is not configured.

On each RS resource configuration in the set , the UE shall estimate the radio link quality and compare it to the threshold Qout\_LR for the purpose of accessing downlink radio link quality of the serving cell beams.

When a CORESET that the UE uses for monitoring PDCCH includes two TCI states and the UE is provided *sfnSchemePdcch* set to 'sfnSchemeA' or 'sfnSchemeB', the UE shall estimate a single downlink radio link quality to derive a single SNR and compare it to the single thresholds Qout\_LR for the purpose of accessing downlink radio link quality of the serving cell beams. How to compute the single SNR based on two active TCI states is up to UE implementation.

The threshold Qout\_LR is defined as the level at which the downlink radio level link of a given resource configuration on set  cannot be reliably received and shall correspond to the BLERout = 10% block error rate of a hypothetical PDCCH transmission. For SSB based beam failure detection, Qout\_LR\_SSB is derived based on the hypothetical PDCCH transmission parameters listed in Table 8.5.2.1-1. For CSI-RS based beam failure detection, Qout\_LR\_CSI-RS is derived based on the hypothetical PDCCH transmission parameters listed in Table 8.5.3.1-1.

Upon request the UE shall deliver configuration indexes from the set as specified in TS 38.213 [3] , to higher layers, and the corresponding L1-RSRP measurement provided that the measured L1-RSRP is equal to or better than the threshold Qin\_LR, which is indicated by higher layer parameter *rsrp-ThresholdSSB*. The UE applies the Qin\_LR threshold to the L1-RSRP measurement obtained from an SSB. The UE applies the Qin\_LR threshold to the L1-RSRP measurement obtained for a CSI-RS resource after scaling a respective CSI-RS reception power with a value provided by higher layer parameter *powerControlOffsetSS*. The RS resource configurations in the set  can be periodic CSI-RS resources or SSBs or both SSB and CSI-RS resources. UE is not required to perform candidate beam detection outside the active DL BWP unless the UE supports *bwpOperationMeasWithoutInterrupt-r18*, provided that the SSB is within the configured UE-specific CBW. UE is not required to perform candidate beam detection on a SCell on which  is not configured.

For a deactivated SCG, the UE may be provided via an RRC reconfiguration message with *tci-info* for PDCCH/PDSCH reception at the transition from deactivated SCG to activated SCG while the SCG is deactivated. After the reception of the RRC reconfiguration message the UE shall perform the BFD on the PSCellof the deactivated SCG using the TCI states accroding to *tci-info* specified in clause 6.3.2 in TS38.331[2]*.*

For UE supporting *ncd-SSB-BWP-Wor-r18*, the SSB and SMTC in this section applies for both CD-SSB and NCD-SSB if it is not additional specified. If SSB in the active DL BWP of serving cell *i* is NCD-SSB, for serving cell *i* the requirements in clause 8.1 apply provided that serving cell *i* is PCell or activated PSCell.

<End of Change 3>

<Start of Change 4>

8.5.5.1 Introduction

The requirements in this clause apply for each SSB resource in the set  configured for a serving cell, provided that the SSBs configured for candidate beam detection are actually transmitted within UE active DL BWP during the entire evaluation period specified in clause 8.5.5.2 unless the UE supports *bwpOperationMeasWithoutInterrupt-r18*, provided that the SSB is within the configured UE-specific CBW. The requirements in this clause apply when UE is required to perform beam failure detection on no more than 1 serving cell per band unless otherwise specified. For UE supporting *intraBandNR-CA-non-collocated-r18* and if *nonCollocatedTypeNR-CA-r18* is not provided for the configured FR1 intra-band non-contiguous CA, the requirements in this clause apply when UE is required to perform beam failure detection on no more than 2 serving cells per band if these 2 serving cells are in non-contiguous carriers, and no more than 1 serving cell per band otherwise.

<End of Change 4>

<Start of Change 5>

8.5.10 Minimum requirement at transitions for beam failure detection

When the UE transitions between DRX and no DRX or when DRX cycle periodicity changes, for each BFD-RS resource, for a duration of time equal to the evaluation period corresponding to the second mode after the transition occurs, the UE shall use an evaluation period that is no less than the minimum of evaluation period corresponding to the first mode and the second mode. Subsequent to this duration, the UE shall use an evaluation period corresponding to the second mode for each BFD-RS resource.

When the UE transitions from a first configuration of BFD resources to a second configuration of BFD resources that is different from the first configuration, for each BFD resource present in the second configuration, for a duration of time equal to the evaluation period corresponding to the second configuration after the transition occurs, the UE shall use an evaluation period that is no less than the minimum of evaluation periods corresponding to the first configuration and the second configuration. Subsequent to this duration, the UE shall use an evaluation period corresponding to the second configuration for each BFD resource present in the second configuration.

When the UE transitions from a first configuration of active TCI state of the CORESET to a second configuration of active TCI state of the CORESET, for each CSI-RS for BFD present in the second configuration, the UE shall use an evaluation period corresponding to the second configuration from the time of transition.

For UE supporting *ncd-SSB-BWP-Wor-r18*, when the UE transitions between BFD CD-SSB resource and BFD NCD-SSB resource due to BWP switching or due to SCG activation or deactivation during one evaluation period, the UE shall use an evaluation period that is the maximum of the evaluation period corresponding to the first SSB type and the second SSB type after the BWP switching or the SCG activation or deactivation. Subsequent to this duration, the UE shall use an evaluation period corresponding to the second SSB type for each BFD-RS resource.

<End of Change 5>

<Start of Change 6>

### 9.2.1 Introduction

A measurement is defined as a SSB based intra-frequency measurement provided the centre frequency of the SSB of the serving cell indicated for measurement and the centre frequency of the SSB of the neighbour cell are the same, and the subcarrier spacing of the two SSBs are also the same.

If the UE supports *ncd-SSB-BWP-Wor-r18*, a measurement is defined as a SSB based intra-frequency measurement provided the centre frequency of the reference SSB of the serving cell and the centre frequency of the SSB of the neighbour cell are the same, and the subcarrier spacing of the two SSBs are also the same. The reference SSB is the SSB defined in BWP-specific *servingCellMO* under *BWP-DownlinkDedicated* of active DL BWP. If the field is absent, the reference SSB is the SSB defined in *servingCellMO* under *ServingCellConfig* [2].

The UE shall be able to identify new intra-frequency cells and perform SS-RSRP, SS-RSRQ, and SS-SINR measurements of identified intra-frequency cells if carrier frequency information is provided by PCell or the PSCell, even if no explicit neighbour list with physical layer cell identities is provided.

The UE can perform intra-frequency SSB based measurements without measurement gaps (either legacy measurement gap or NCSG) if

- CD-SSB is within the configured UE-specific CBW provided UE supports *bwpOperationMeasWithoutInterrupt-r18*, or

- NCD-SSB is completely contained in the active downlink BWP of the UE provided the UE supports *ncd-SSB-BWP-Wor-r18* and *servingCellMO* is present in the corresponding *BWP-DownlinkDedicated*, or

- the UE indicates ‘no-gap’ via *intraFreq-needForGap* for intra-frequency measurement, or

- the SSB is completely contained in the active BWP of the UE, or

- the active downlink BWP is initial BWP [3].

Besides the conditions listed above,

- for UE supporting *nr-NeedForGapNCSG-reporting-r17* and indicating *NeedForGapNCSG-InfoNR* for intra-frequency measurement,

- An intra-frequency SSB measurement is defined as measurement without gap if

- the UE indicates ‘nogap-noncsg’ via *NeedForGapNCSG-InfoNR* for the intra-frequency measurement, and

- the SSB is not completely contained in the active BWP of the UE, and

- the active downlink BWP is not an initial BWP [3].

- An intra-frequency SSB measurement is defined as measurement with NCSG if

- the UE indicates ‘ncsg’ via *NeedForGapNCSG-InfoNR* for the intra-frequency measurement, and

- the SSB is not completely contained in the active BWP of the UE, and

- the active downlink BWP is not an initial BWP [3]

- An intra-frequency SSB measurement is defined as measurement with gap if

- the UE indicates ‘gap’ via *NeedForGapNCSG-InfoNR* for the intra-frequency measurement, and

- the SSB is not completely contained in the active BWP of the UE, and

- the active downlink BWP is not an initial BWP [3]

- The UE can perform intra-frequency SSB based measurement corresponding to a deactivated SCell or dormant SCell with NCSG.

- For intra-frequency SSB based measurements with NCSG, UE may cause scheduling restriction as specified in clause 9.2.7.3.

- for UE supporting *nr-NeedForInterruptionReport-r18* for intra-frequency measurement and indicating *NeedForInterruptionInfoNR-r18* for intra-frequency measurement,,

- An intra-frequency SSB measurement is defined as measurement without gap if

- the UE indicates ‘no-gap’ via intraFreq-needForGap and the UE indicates ‘no-gap-no-interruption’ or no-gap-with-interruption via NeedForInterruptionInfoNR-r18 for the intra-frequency measurement

- UE is not allowed to cause interruption during intra-frequency measurement without gap when UE indicate no-gap-no-interruption

- UE is allowed to cause interruption during intra-frequency measurement without gap when UE indicate no-gap-with-interruption, the interruption requirement is defined in clause 8.2.2.2.19

- An intra-frequency SSB measurement is defined as measurement with gap if

- the UE indicates ‘gap’ via intraFreq-needForGap for intra-frequency measurement

For intra-frequency SSB based measurements without measurement gaps, UE may cause scheduling restriction as specified in clause 9.2.5.3.SSB based measurements are configured along with one or two measurement timing configuration(s) (SMTC(s)) which provides periodicity, duration and offset information on a window of up to 5ms where the measurements are to be performed. For intra-frequency connected mode measurements, up to two measurement window periodicities may be configured. A single measurement window offset and measurement duration are configured per intra-frequency measurement object.

When measurement gaps are needed, the UE is not expected to detect SSB and measure RSSI of RSRQ which start earlier than the gap starting time + switching time, nor detect SSB and measure RSSI of RSRQ which end later than the gap end – switching time. Switching time is 0.5ms for frequency range FR1 and 0.25ms for frequency range FR2.

The requirements in this clause shall also apply, when the UE is configured to perform SRS carrier based switching and using measurement gaps.

The measurement requirements defined for an activated SCell with a non-dormant active BWP defined in this clause shall also apply to an activated SCell with dormant BWP as active BWP.

The measurement reporting delay can be longer for the measurement reporting requirements in this clause when IDC autonomous denial is configured.

*Editor Note: FFS the scenario when deactivated SCell measurement object is fully overlapping with measurement gap*

The intra-frequency measurement requirements in clause 9.2.5 applies for the following scenarios:

- SSB based intra-frequency measurements with no measurement gap,

- for a UE supporting concurrent gaps and when concurrent gaps are configured:

- When none of the SMTC occasions of this intra-frequency measurement object are overlapped by the union of concurrent measurement gaps.

- When part of the SMTC occasions of this intra-frequency measurement object are overlapped by the union of concurrent measurement gaps.

- otherwise, for a UE not supporting concurrent gaps or if concurrent gaps are not configured:

- When none of the SMTC occasions of this intra-frequency measurement object are overlapped by the measurement gap.

- When part of the SMTC occasions of this intra-frequency measurement object are overlapped by the measurement gap.

- SSB based intra-frequency measurements object with no measurement gap for UE capable of *nr-NeedForInterruptionReport-r18*,

- When UE indicates ‘no-gap’ via *intraFreq-needForGap* for intra-frequency measurement and indicates *no-gap-with-interruption* or *no-gap-no-interruption* via *NeedForInterruptionInfoNR-r18* for the intra-frequency measurement intra-frequency, and SMTC is fully non overlapping with GAP,

- When UE indicates ‘no-gap’ via *intraFreq-needForGap* for intra-frequency measurement and indicates *no-gap-no-interruption* via *NeedForInterruptionInfoNR-r18* for the intra-frequency measurement, and SMTC is partially overlapping with GAP,

The intra-frequency measurement requirements in clause 9.2.6 applies for the following scenarios:

- SSB based intra-frequency measurements with measurement gap,

- SSB based intra-frequency measurements with no measurement gap with the following condition,

- for a UE supporting concurrent gaps and when concurrent gaps are configured:

- when all of the SMTC occasions of this intra-frequency measurement object are overlapped with the associated measurement gap in the concurrent measurement gaps, or

- when part of the SMTC occasions of this intra-frequency measurement object are overlapped with the associated measurement gap and all the SMTC occasions of this intra-frequency measurement object are overlapped with the union of concurrent measurement gaps.

- otherwise, for a UE not supporting concurrent gaps or if concurrent gaps are not configured:

- when all of the SMTC occasions of this intra-frequency measurement object are overlapped with the measurement gap.

- SSB-based intra-frequency measurement object with NCSG, and measurement gap is configured.

- SSB based intra-frequency measurements object with no measurement gap for UE capable of *NeedForInterruptionReport-r18*,

- When UE indicates ‘no-gap’ via *intraFreq-needForGap* for intra-frequency measurement and indicates *no-gap-with-interruption* via *NeedForInterruptionInfoNR-r18* for the intra-frequency measurement, and SMTC is partially overlapping with GAP

The intra-frequency measurement requirements in clause 9.2.7 applies for the following scenarios:

- SSB based intra-frequency measurements without measurement gaps corresponding to an activated serving cell, when all of the SMTC occasions of this intra-frequency measurement object are overlapped by the NCSG;

- SSB-based intra-frequency measurement object corresponding to an activated serving cell (in non-dormancy) when UE supports nr-NeedForGapNCSG-reporting-r17 and indicates ‘ncsg’ in NeedForGapNCSG-InfoNR for intra-frequency measurement and all or part of the SMTC occasions of this intra-frequency measurement object are overlapped by the NCSG;

- SSB-based intra-frequency measurement object corresponding to a deactivated serving cell or to an activated serving cell in dormancy when all or part of the SMTC occasions of this intra-frequency measurement object are overlapped by the NCSG.

Editor’s note: RAN4 has to decide the UE behaviour when DRX is condifured whehter interruptions are allowed.

<End of Change 6>

<Start of Change 7>

9.5.1 Introduction

When configured by the network, the UE shall be able to perform L1-RSRP measurements of configured CSI-RS, SSB or CSI-RS and SSB resources for L1-RSRP. The measurements shall be performed for a serving cell, including PCell, PSCell, or SCell, on the resources configured for L1-RSRP measurements within the active BWP. For UE supporting *bwpOperationMeasWithoutInterrupt-r18*, the measurements shall also be performed for a serving cell, including PCell, PSCell, or SCell, on the resources configured for L1-RSRP measurements outside the active BWP. For UE supporting *ncd-SSB-BWP-Wor-r18*, the SSB and SMTC in this section applies for both CD-SSB and NCD-SSB if it is not additional specified. If SSB in the active DL BWP of serving cell *i* is NCD-SSB, for serving cell *i* the requirements in clause 8.1 apply provided that serving cell *i* is PCell or activated PSCell.

The UE shall be able to measure all CSI-RS resources and/or SSB resources of the *nzp-CSI-RS-ResourceSet* and/or *csi-SSB-ResourceSet* within the *CSI-ResourceConfig* settings configured for L1-RSRP for the active BWP, provided that the number of resources, including the number of SSB resources of the cell with PCI different from serving cell configured for L1-RSRP measurements in 9.13, does not exceed the UE capability indicated by *beamManagementSSB-CSI-RS*. If the UE supports *bwpOperationMeasWithoutInterrupt-r18*, [UE shall be able to measure the SSB reources of *csi-SSB-ResourceSet* within the *CSI-ResourceConfig* configured outside active BWP], provided that the SSB is within the configured UE-specific CBW.

The UE shall report the measurement quantity (*reportQuantity*) and send periodic, semi-persistent or aperiodic reports, according to the *reportConfigType* according to the CSI reporting configuration(s) (*CSI-ReportConfig*) for the active BWP.

The measurement reporting delay can be longer for the measurement reporting requirements in this clause when IDC autonomous denial is configured.

<End of Change 7>

<Start of Change 8>

9.8.1 Introduction

When configured by the network, the UE shall be able to perform L1-SINR measurements with the measurement resources configured as the selection of:

- CSI-RS based CMR and no dedicated IMR configured;

- SSB based CMR and dedicated IMR configured;

- CSI-RS based CMR and dedicated IMR configured.

The measurements shall be performed for a serving cell, including PCell, PSCell, or SCell, on the resources configured for L1-SINR measurements within the active BWP. For UE supporting *bwpOperationMeasWithoutInterrupt-r18*, the measurements shall also be performed for a serving cell, including PCell, PSCell, or SCell, on the resources configured for L1-SINR measurements outside the active BWP, provided that the SSB is within the configured UE-specific CBW. For UE supporting *ncd-SSB-BWP-Wor-r18*, the SSB and SMTC in this section applies for both CD-SSB and NCD-SSB if it is not additional specified. If SSB in the active DL BWP of serving cell *i* is NCD-SSB, for serving cell *i* the requirements in clause 8.1 apply provided that serving cell *i* is PCell or activated PSCell.

The UE shall be able to measure all CSI-RS resources and/or SSB resources and/or CSI-IM resources of the *nzp-CSI-RS-ResourceSet* and/or *csi-SSB-ResourceSet and/or CSI-IM-ResourceSet* within the *CSI-ResourceConfig* settings for L1-SINR for the active BWP, and measure interference on corresponding NZP CSI-RS or CSI-IM resources if configured, provided that the number of resources does not exceed the UE capability indicated by *beamManagementSSB-CSI-RS*. If the UE supports *bwpOperationMeasWithoutInterrupt-r18*, [UE shall be able to measure the SSB reources of *csi-SSB-ResourceSet* within the *CSI-ResourceConfig* configured outside active BWP], provided that the SSB is within the configured UE-specific CBW.

The UE shall report the measurement quantity (*reportQuantity*) and send periodic, semi-persistent or aperiodic reports, according to the *reportConfigType* according to the CSI reporting configuration(s) (*CSI-ReportConfig*) for the active BWP.

The measurement reporting delay can be longer for the measurement reporting requirements in this clause when IDC autonomous denial is configured.

<End of Change 8>