**3GPP TSG-RAN WG2 Meeting #110 *WAS R2-2005159***

**Online, 1 – 12 June 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
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|  | **331**  | **CR** |  | **rev** | **4** | **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 | **X** | Core Network |  |

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| ***Title:***  | Missing reportAddNeighMeas in periodic measurement reporting |
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| ***Source to WG:*** | Nokia, Nokia Shanghai Bell, Ericsson, NTT DOCOMO |
| ***Source to TSG:*** | R2 |
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| ***Work item code:*** |  NR\_newRAT-Core |  | ***Date:*** | 2020-05-21 |
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| ***Category:*** | **F** |  | ***Release:*** | 16 |
|  | *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 canbe 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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | Procedural text comprises reportAddNeighMeas, but ASN.1 is missing this parameter for the part concerning periodic measurement reporting, i.e. only the event-triggered IE comprises reportAddNeighMeas. |
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| ***Summary of change:*** | reportAddNeighMeas is added into PeriodicalReportConfig. Corresponding field description is also inserted.Inter-operability: 1. If the network is implemented according to the CR and the UE is not the UE will not comprehend the configuration requiring the UE to periodically report neighbouring cell results.
2. If the UE is implemented according to the CR and the network is not, no impact is foreseen as the UE will not be configured with this parameter.
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| ***Consequences if not approved:*** | Neighbouring cells’ results on serving frequencies are not included in periodic measurement reports. |
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| ***Clauses affected:*** | 6.3.2 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  |  |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** |  |

*First Modified Subclause*

– *ReportConfigNR*

The IE *ReportConfigNR* specifies criteria for triggering of an NR measurement reporting event or of a CHO or CPC event. For events labelled AN with N equal to 1, 2 and so on, measurement reporting events and CHO or CPC events are based on cell measurement results, which can either be derived based on SS/PBCH block or CSI-RS.

Event A1: Serving becomes better than absolute threshold;

Event A2: Serving becomes worse than absolute threshold;

Event A3: Neighbour becomes amount of offset better than PCell/PSCell;

Event A4: Neighbour becomes better than absolute threshold;

Event A5: PCell/PSCell becomes worse than absolute threshold1 AND Neighbour/SCell becomes better than another absolute threshold2;

Event A6: Neighbour becomes amount of offset better than SCell.

For event I1, measurement reporting event is based on CLI measurement results, which can either be derived based on SRS-RSRP or CLI-RSSI.

Event I1: Interference becomes higher than absolute threshold.

***ReportConfigNR* information element**

-- ASN1START

-- TAG-REPORTCONFIGNR-START

ReportConfigNR ::= SEQUENCE {

 reportType CHOICE {

 periodical PeriodicalReportConfig,

 eventTriggered EventTriggerConfig,

 ...,

 reportCGI ReportCGI,

 reportSFTD ReportSFTD-NR,

 condTriggerConfig-r16 CondTriggerConfig-r16,

 cli-Periodical-r16 CLI-PeriodicalReportConfig-r16,

 cli-EventTriggered-r16 CLI-EventTriggerConfig-r16

 }

}

ReportCGI ::= SEQUENCE {

 cellForWhichToReportCGI PhysCellId,

 ...,

 [[

 useAutonomousGaps-r16 ENUMERATED {setup} OPTIONAL -- Need R

 ]]

}

ReportSFTD-NR ::= SEQUENCE {

 reportSFTD-Meas BOOLEAN,

 reportRSRP BOOLEAN,

 ...,

 [[

 reportSFTD-NeighMeas ENUMERATED {true} OPTIONAL, -- Need R

 drx-SFTD-NeighMeas ENUMERATED {true} OPTIONAL, -- Need R

 cellsForWhichToReportSFTD SEQUENCE (SIZE (1..maxCellSFTD)) OF PhysCellId OPTIONAL -- Need R

 ]]

}

CondTriggerConfig-r16 ::= SEQUENCE {

 condEventId CHOICE {

 condEventA3 SEQUENCE {

 a3-Offset MeasTriggerQuantityOffset,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger

 },

 condEventA5 SEQUENCE {

 a5-Threshold1 MeasTriggerQuantity,

 a5-Threshold2 MeasTriggerQuantity,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger

 },

 ...

 },

 rsType-r16 NR-RS-Type,

 ...

}

EventTriggerConfig::= SEQUENCE {

 eventId CHOICE {

 eventA1 SEQUENCE {

 a1-Threshold MeasTriggerQuantity,

 reportOnLeave BOOLEAN,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger

 },

 eventA2 SEQUENCE {

 a2-Threshold MeasTriggerQuantity,

 reportOnLeave BOOLEAN,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger

 },

 eventA3 SEQUENCE {

 a3-Offset MeasTriggerQuantityOffset,

 reportOnLeave BOOLEAN,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger,

 useWhiteCellList BOOLEAN

 },

 eventA4 SEQUENCE {

 a4-Threshold MeasTriggerQuantity,

 reportOnLeave BOOLEAN,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger,

 useWhiteCellList BOOLEAN

 },

 eventA5 SEQUENCE {

 a5-Threshold1 MeasTriggerQuantity,

 a5-Threshold2 MeasTriggerQuantity,

 reportOnLeave BOOLEAN,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger,

 useWhiteCellList BOOLEAN

 },

 eventA6 SEQUENCE {

 a6-Offset MeasTriggerQuantityOffset,

 reportOnLeave BOOLEAN,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger,

 useWhiteCellList BOOLEAN

 },

 ...

 },

 rsType NR-RS-Type,

 reportInterval ReportInterval,

 reportAmount ENUMERATED {r1, r2, r4, r8, r16, r32, r64, infinity},

 reportQuantityCell MeasReportQuantity,

 maxReportCells INTEGER (1..maxCellReport),

 reportQuantityRS-Indexes MeasReportQuantity OPTIONAL, -- Need R

 maxNrofRS-IndexesToReport INTEGER (1..maxNrofIndexesToReport) OPTIONAL, -- Need R

 includeBeamMeasurements BOOLEAN,

 reportAddNeighMeas ENUMERATED {setup} OPTIONAL, -- Need R

 ...,

 [[

 measRSSI-ReportConfig-r16 MeasRSSI-ReportConfig-r16 OPTIONAL, -- Need R

 useT312-r16 BOOLEAN OPTIONAL, -- Need M

 includeCommonLocationInfo-r16 ENUMERATED {true} OPTIONAL, -- Need R

 includeBT-Meas-r16 BT-NameListConfig-r16 OPTIONAL, -- Need R

 includeWLAN-Meas-r16 WLAN-NameListConfig-r16 OPTIONAL, -- Need R

 includeSensor-Meas-r16 Sensor-NameListConfig-r16 OPTIONAL -- Need R

 ]]

}

PeriodicalReportConfig ::= SEQUENCE {

 rsType NR-RS-Type,

 reportInterval ReportInterval,

 reportAmount ENUMERATED {r1, r2, r4, r8, r16, r32, r64, infinity},

 reportQuantityCell MeasReportQuantity,

 maxReportCells INTEGER (1..maxCellReport),

 reportQuantityRS-Indexes MeasReportQuantity OPTIONAL, -- Need R

 maxNrofRS-IndexesToReport INTEGER (1..maxNrofIndexesToReport) OPTIONAL, -- Need R

 includeBeamMeasurements BOOLEAN,

 useWhiteCellList BOOLEAN,

 ...,

 [[

 measRSSI-ReportConfig-r16 MeasRSSI-ReportConfig-r16 OPTIONAL, -- Need R

 includeCommonLocationInfo-r16 ENUMERATED {true} OPTIONAL, -- Need R

 includeBT-Meas-r16 BT-NameListConfig-r16 OPTIONAL, -- Need R

 includeWLAN-Meas-r16 WLAN-NameListConfig-r16 OPTIONAL, -- Need R

 includeSensor-Meas-r16 Sensor-NameListConfig-r16 OPTIONAL, -- Need R

 ul-DelayValueConfig-r16 SetupRelease { UL-DelayValueConfig-r16 } OPTIONAL, -- Need R

 reportAddNeighMeas-r16 ENUMERATED {setup} OPTIONAL -- Need R

 ]]

}

NR-RS-Type ::= ENUMERATED {ssb, csi-rs}

MeasTriggerQuantity ::= CHOICE {

 rsrp RSRP-Range,

 rsrq RSRQ-Range,

 sinr SINR-Range

}

MeasTriggerQuantityOffset ::= CHOICE {

 rsrp INTEGER (-30..30),

 rsrq INTEGER (-30..30),

 sinr INTEGER (-30..30)

}

MeasReportQuantity ::= SEQUENCE {

 rsrp BOOLEAN,

 rsrq BOOLEAN,

 sinr BOOLEAN

}

MeasRSSI-ReportConfig-r16 ::= SEQUENCE {

 channelOccupancyThreshold-r16 INTEGER (1..ffsValue) OPTIONAL, -- Need R

 ...

}

CLI-EventTriggerConfig-r16 ::= SEQUENCE {

 eventId-r16 CHOICE {

 eventI1-r16 SEQUENCE {

 i1-Threshold-r16 MeasTriggerQuantityCLI-r16,

 reportOnLeave-r16 BOOLEAN,

 hysteresis-r16 Hysteresis,

 timeToTrigger-r16 TimeToTrigger

 },

 ...

 },

 reportInterval-r16 ReportInterval,

 reportAmount-r16 ENUMERATED {r1, r2, r4, r8, r16, r32, r64, infinity},

 maxReportCLI-r16 INTEGER (1..maxCLI-Report-r16),

 ...

}

CLI-PeriodicalReportConfig-r16 ::= SEQUENCE {

 reportInterval-r16 ReportInterval,

 reportAmount-r16 ENUMERATED {r1, r2, r4, r8, r16, r32, r64, infinity},

 reportQuantityCLI-r16 MeasReportQuantityCLI-r16,

 maxReportCLI-r16 INTEGER (1..maxCLI-Report-r16),

 ...

}

MeasTriggerQuantityCLI-r16 ::= CHOICE {

 srs-RSRP-r16 SRS-RSRP-Range-r16,

 cli-RSSI-r16 CLI-RSSI-Range-r16

}

MeasReportQuantityCLI-r16 ::= ENUMERATED {srs-rsrp, cli-rssi}

-- TAG-REPORTCONFIGNR-STOP

-- ASN1STOP

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| ***CondTriggerConfig* field descriptions** |
| ***a3-Offset***Offset value(s) to be used in NR conditional configuration triggering condition for cond event a3. The actual value is field value \* 0.5 dB. |
| ***a5-Threshold1/ a5-Threshold2***Threshold value associated to the selected trigger quantity (e.g. RSRP, RSRQ, SINR) per RS Type (e.g. SS/PBCH block, CSI-RS) to be used in NR conditional configuration triggering condition for event number a5. In the same *eventA5*, the network configures the same quantity for the *MeasTriggerQuantity* of the *a5-Threshold1* and for the *MeasTriggerQuantity* of the *a5-Threshold2*. |
| ***condEventId***Choice of NR conditional reconfiguration event triggered criteria. |
| ***timeToTrigger***Time during which specific criteria for the event needs to be met in order to execute the conditional configuration evaluation. |

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| ***ReportConfigNR* field descriptions** |
| ***reportType***Type of the configured measurement report. In EN-DC, network does not configure report of type *reportCGI* using SRB3. The *condTriggerConfig is* used for CHO or CPC configuration. |

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| ***ReportCGI* field descriptions** |
| ***useAutonomousGaps***Indicates whether or not the UE is allowed to use autonomous gaps in acquiring system information from the NR neighbour cell. When the field is included, the UE applies the corresponding value for T321. |

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| ***EventTriggerConfig* field descriptions** |
| ***a3-Offset/a6-Offset***Offset value(s) to be used in NR measurement report triggering condition for event a3/a6. The actual value is field value \* 0.5 dB. |
| ***aN-ThresholdM***Threshold value associated to the selected trigger quantity (e.g. RSRP, RSRQ, SINR) per RS Type (e.g. SS/PBCH block, CSI-RS) to be used in NR measurement report triggering condition for event number aN. If multiple thresholds are defined for event number aN, the thresholds are differentiated by M. The network configures aN-Threshold1 only for events A1, A2, A4, A5 and a5-Threshold2 only for event A5. In the same *eventA5*, the network configures the same quantity for the *MeasTriggerQuantity* of the *a5-Threshold1* and for the *MeasTriggerQuantity* of the *a5-Threshold2*. |
| ***channelOccupancyThreshold***RSSI threshold which is used for channel occupancy evaluation. |
| ***eventId***Choice of NR event triggered reporting criteria. |
| ***maxNrofRS-IndexesToReport***Max number of RS indexes to include in the measurement report for A1-A6 events. |
| ***maxReportCells***Max number of non-serving cells to include in the measurement report. |
| ***reportAddNeighMeas***Indicates that the UE shall include the best neighbour cells per serving frequency. |
| ***reportAmount****Number* of measurement reports applicable for *eventTriggered* as well as for *periodical* report types. |
| ***reportOnLeave***Indicates whether or not the UE shall initiate the measurement reporting procedure when the leaving condition is met for a cell in *cellsTriggeredList*, as specified in 5.5.4.1. |
| ***reportQuantityCell***The cell measurement quantities to be included in the measurement report. |
| ***reportQuantityRS-Indexes***Indicates which measurement information per RS index the UE shall include in the measurement report. |
| ***timeToTrigger***Time during which specific criteria for the event needs to be met in order to trigger a measurement report. |
| ***ul-DelayValueConfig***If the field is present, the UE shall perform the actual PDCP queueing delay measurement per DRB as specified in TS 38.314 [53] and the UE shall ignore the fields *reportQuantityCell* and *maxReportCells*. The applicable values for the corresponding *reportInterval* are (one of the) {ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, ms20480, ms40960, min1,min6, min12, min30}. The *reportInterval* indicates the periodicity for reporting of UL PDCP Delay per DRB measurement as specified in TS 38.314 [53]. |
| ***useT312***If value *TRUE* is configured, the UE shall use the timer T312 with the value *t312* as specified in the corresponding *measObjectNR*. If value FALSE is configured, the timer T312 is considered as disabled. Network configures value *TRUE* only if *reportType* is set to *eventTriggered*. |
| ***useWhiteCellList***Indicates whether only the cells included in the white-list of the associated measObject are applicable as specified in 5.5.4.1. |

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| ***CLI-EventTriggerConfig* field descriptions** |
| ***i1-Threshold***Threshold value associated to the selected trigger quantity (e.g. SRS-RSRP, CLI-RSSI) to be used in CLI measurement report triggering condition for event i1. |
| ***eventId***Choice of CLI event triggered reporting criteria. |
| ***maxReportCLI***Max number of CLI measurement resource to include in the measurement report. |
| ***reportAmount****Number* of measurement reports. |
| ***reportOnLeave***Indicates whether or not the UE shall initiate the measurement reporting procedure when the leaving condition is met for a CLI measurement resource in *srsTriggeredList* or *rssiTriggeredList*, as specified in 5.5.4.1. |
| ***timeToTrigger***Time during which specific criteria for the event needs to be met in order to trigger a measurement report. |

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| ***CLI-PeriodicalReportConfig* field descriptions** |
| ***maxReportCLI***Max number of CLI measurement resource to include in the measurement report. |
| ***reportAmount****Number* of measurement reports. |
| ***reportQuantityCLI***The CLI measurement quantities to be included in the measurement report. |

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| ***PeriodicalReportConfig* field descriptions** |
| ***maxNrofRS-IndexesToReport***Max number of RS indexes to include in the measurement report. |
| ***maxReportCells***Max number of non-serving cells to include in the measurement report. |
| ***reportAddNeighMeas***Indicates that the UE shall include the best neighbour cells per serving frequency. |
| ***reportAmount****Number* of measurement reports applicable for *eventTriggered* as well as for *periodical* report types |
| ***reportQuantityCell***The cell measurement quantities to be included in the measurement report. |
| ***reportQuantityRS-Indexes***Indicates which measurement information per RS index the UE shall include in the measurement report. |
| ***useWhiteCellList***Indicates whether only the cells included in the white-list of the associated measObject are applicable as specified in 5.5.4.1. |

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| ***ReportSFTD-NR* field descriptions** |
| ***cellForWhichToReportSFTD***Indicates the target NR neighbour cells for SFTD measurement between PCell and NR neighbour cells. |
| ***drx-SFTD-NeighMeas***Indicates that the UE shall use available idle periods (i.e. DRX off periods) for the SFTD measurement in NR standalone. The network only includes *drx-SFTD-NeighMeas* field when *reprtSFTD-NeighMeas* is set to true. |
| ***reportSFTD-Meas***Indicates whether UE is required to perform SFTD measurement between PCell and NR PSCell in NR-DC. |
| ***reportSFTD-NeighMeas***Indicates whether UE is required to perform SFTD measurement between PCell and NR neighbour cells in NR standalone. The network does not include this field if *reportSFTD-Meas* is set to *true*. |
| ***reportRSRP***Indicates whether UE is required to include RSRP result of NR PSCell in SFTD measurement result, derived based on SSB. If it is set to true, the network should ensure that *ssb-ConfigMobility* is included in the measurement object for NR PSCell. |