**3GPP TSG-RAN2 Meeting #112-e *R2-20xxxxx***

**Online, 2nd Nov 2020 - 13th Nov 2020**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **36.331** | **CR** | **xxxx** | **rev** |  | **Current version:** | **16.2.1** |  |
|  | | | | | | | | |
| *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:*** | Correction on paging narrowband selection for eMTC UE | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE Corporation, Sanechips | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_eMTC5-Core | | | | |  | ***Date:*** | | | 2020-10-22 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-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 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | In previous meeting, a clarification has been introduced that if UE monitors GWUS, UE would selects narrowbands (paging carriers) only among the narrowbands (paging carriers) that supports the GWUS, Otherwise, the UE would selects narrowbands (paging carriers) among the ones provided in system information. Such clarification is also applicable to eMTC UE in RRC\_INACTIVE. Moreover, RAN2 has agreement that Rel-15 WUS and Rel-16 Group WUS are not supported for eMTC UEs in RRC\_INACTIVE. So there exist ambiguity for eMTC UEs in RRC\_INACTIVE to select paging narrowband.  For eMTC UE in RRC\_INACTIVE, as it needs to monitor both CN paing and RAN paging and the POs for CN paging may coincide with POs for RAN paging in some scenorios, we need clarification that UE in RRC\_INACTIVE needs to monitor CN and RAN paging in the same paging narrowband. Moreover, considering lack of UE radio Paging information delivery from source eNB to target eNB during handover procedure, RAN2 agree to clarify that eMTC UE always selects paging narrowbands from the ones provided in system information.  In order to avoid GWUS-capable UE to select paging narrowband not configured with GWUS, a clarification is needed that the eNB does not signal the parameter for configuring GWUS per narrowband in this release. | | | | | | | | |
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| ***Summary of change:*** | | To clarify that the eNB does not signal the parameter for configuring GWUS per narrowband, e.g., *groupNarrowBandList-r16* in *GWUS-Config* in this release.  **Impact Analysis**  Impacted functionality:  The changes only impacts paging narrowbands selection for eMTC UEs in RRC\_INACTIVE state.  Inter-operability:  If the UE is implementing according to this CR and the network is not, or virus, there is no inter-operability issue, the eMTC UE in RRC\_INACTIVE state may miss the CN paging. | | | | | | | | |
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| ***Consequences if not approved:*** | | The eMTC UE in RRC\_INACTIVE may need to monitor two paging narrowbands (e.g. one for CN paging and another for RAN paging). | | | | | | | | |
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| ***Clauses affected:*** | | 6.3.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **x** |  | Other core specifications | | | | TS 36.304 CRxxxx | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

**<Start of the change>**

#### *– GWUS-Config*

The IE *GWUS-Config* is used to specify the Group WUS configuration. For the UEs supporting GWUS, E-UTRAN uses GWUS to indicate that the UE shall attempt to receive paging in that cell, see TS 36.304 [4].

*GWUS-Config* information element

-- ASN1START

GWUS-Config-r16 ::= SEQUENCE {

groupAlternation-r16 ENUMERATED {true} OPTIONAL, -- Need OR

commonSequence-r16 ENUMERATED {g0, g126} OPTIONAL, -- Need OR

timeParameters-r16 GWUS-TimeParameters-r16 OPTIONAL, -- Cond NoWUSr15

resourceConfigDRX-r16 GWUS-ResourceConfig-r16,

resourceConfig-eDRX-Short-r16 GWUS-ResourceConfig-r16 OPTIONAL, -- Need OP

resourceConfig-eDRX-Long-r16 GWUS-ResourceConfig-r16 OPTIONAL, -- Cond TimeOffset

probThreshList-r16 GWUS-ProbThreshList-r16 OPTIONAL, -- Cond ProbabilityBased

groupNarrowBandList-r16 GWUS-GroupNarrowBandList-r16 OPTIONAL -- Need OR

}

GWUS-TimeParameters-r16 ::= SEQUENCE {

maxDurationFactor-r16 ENUMERATED {one32th, one16th, one8th, one4th},

numPOs-r16 ENUMERATED {n1, n2, n4, spare1} DEFAULT n1,

timeOffsetDRX-r16 ENUMERATED {ms40, ms80, ms160, ms240},

timeOffset-eDRX-Short-r16 ENUMERATED {ms40, ms80, ms160, ms240},

timeOffset-eDRX-Long-r16 ENUMERATED {ms1000, ms2000} OPTIONAL, -- Need OP

numDRX-CyclesRelaxed-r16 ENUMERATED {n1, n2, n4, n8} OPTIONAL, -- Need OR

powerBoost-r16 ENUMERATED {dB0, dB1dot8, dB3, dB4dot8} OPTIONAL, -- Need OR

...

}

GWUS-ResourceConfig-r16 ::= SEQUENCE {

resourceMappingPattern-r16 CHOICE {

resourceLocationWithWUS ENUMERATED {primary, secondary, primary3FDM},

resourceLocationWithoutWUS ENUMERATED {n0, n2}

},

numGroupsList-r16 GWUS-NumGroupsList-r16 OPTIONAL, -- Need OP

groupsForServiceList-r16 GWUS-GroupsForServiceList-r16 OPTIONAL -- Cond ProbabilityBased

}

GWUS-GroupsForServiceList-r16 ::= SEQUENCE (SIZE (1..maxGWUS-ProbThresholds-r16)) OF INTEGER (1..maxGWUS-Groups-1-r16)

GWUS-GroupNarrowBandList-r16 ::= SEQUENCE (SIZE (1..maxAvailNarrowBands-r13)) OF BOOLEAN

GWUS-NumGroupsList-r16 ::= SEQUENCE (SIZE (1..maxGWUS-Resources-r16)) OF GWUS-NumGroups-r16

GWUS-ProbThreshList-r16 ::= SEQUENCE (SIZE (1..maxGWUS-ProbThresholds-r16)) OF GWUS-PagingProbThresh-r16

GWUS-NumGroups-r16 ::= ENUMERATED {n1, n2, n4, n8}

GWUS-PagingProbThresh-r16 ::= ENUMERATED {p20, p30, p40, p50, p60, p70, p80, p90}

-- ASN1STOP

| *GWUS-Config* field descriptions |
| --- |
| ***commonSequence***  Presence of the field indicates common WUS sequence is configured. Value *g0* indicates common WUS sequence for the shared WUS resource corresponds to *g = 0*, and value *g126* indicates common WUS sequence for the shared WUS resource corresponds to *g = 126*, see TS 36.211 [21]. |
| ***groupAlternation***  Presence of the field enables WUS group alternation between the two or more WUS resources for the gap type, see TS 36.304 [4]. |
| ***groupNarrowBandList***  List indicating which paging narrowbands support group WUS see TS 36.304 [4]. First entry in the list indicates WUS support for first paging narrowband, second entry in the list indicates WUS support for second paging narrowband, and so on. If E-UTRAN includes *groupNarrowBandList*, the number of entries is equal to the value of *paging-narrowBands*. If this list is absent, group WUS is supported on all paging narrowbands. E-UTRAN does not configure this field in this release of the specification. |
| ***groupsForServiceList***  Number of WUS groups for each paging probability group see TS 36.304 [4]. The first entry corresponds to the first probability group, the second entry corresponds to the second paging probability group, and so on. Total number of WUS groups in this list cannot be more than the total number of WUS groups in *numGroupsList*. If E-UTRAN includes *groupsForServiceList*, it includes the same number of entries and listed in the same order as in *probThreshList*. |
| ***numGroupsList***  List of WUS groups for each WUS resource see TS 36.304 [4]. First entry corresponds to the first resource, second entry corresponds to the second resource, and so on. *numGroupsList* is mandatory present in *resourceConfigDRX*. If *numGroupsList* is not present in *resourceConfig-eDRX-Short*, parameterfor DRX WUS resource applies for short eDRX WUS resource. If *numGroupsList* is not present in *resourceConfig-eDRX-Long*, parameterfor short eDRX WUS resource applies for long eDRX WUS resource. |
| ***probThreshList***  Paging probability thresholds corresponding to the paging probability groups, see TS 36.304 [4]. Value *p20* corresponds to 20%, value *p30* corresponds to 30%, and so on. |
| ***resourceConfigDRX, resourceConfig-eDRX-Short, resourceConfig-eDRX-Long***  WUS resource configured for each gap type see TS 36.304 [4]. If *resourceConfig-eDRX-Short* is not present, DRX WUS parameters apply for short eDRX WUS resource. If *resourceConfig-eDRX-Long* is not present, short eDRX WUS parameters apply for long eDRX WUS resource. |
| ***resourceMappingPattern***  Identifies the WUS resource mapping to time/frequency as defined in TS 36.304 [4]. If *wus-Config-r15* is present in *SystemInformationBlockType2*, the field is set to value *resourceLocationWithWUS*; otherwise the field is set to value *resourceLocationWithoutWUS*. |
| ***timeParameters***  Time domain WUS configuration information. For individual field descriptions, see *WUS-Config.* If the field is absent, the parameters in *wus-Config* apply. |

| Conditional presence | Explanation |
| --- | --- |
| *NoWUSr15* | The field is mandatory present if *wus-Config-r15* is not present in *SystemInformationBlockType2*; otherwise the field is not present. |
| *ProbabilityBased* | The field is mandatory present if paging probability based WUS group selection is configured; otherwise the field is not present and the UE shall delete any existing value for this field. |
| *TimeOffset* | The field is optionally present, Need OP, if *timeOffset-eDRX-Long* is present in *timeParameters*; otherwise the field is not present, and the UE shall delete any existing value for this field. |

**<End of the change>**