**3GPP TSG-RAN5 Meeting #99 *R5-23XXXX***

**Incheon, Korea (Republic Of), 22nd May 2023 - 26th May 2023**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.523-2** | **CR** | **XXXX** | **rev** | **-** | **Current version:** | **18.0.0** |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Update to NTN test case 22.4.13 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated, MediaTek Inc. | | | | | | | | | |
| ***Source to TSG:*** | R5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_NBIOT\_eMTC\_NTN\_plus\_EPS-UEConTest | | | | |  | ***Date:*** | | | 2023-05-24 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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)*  *Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Based on the discussion paper R5-233161, test case 22.4.13 is extended to the UEs supporting NTN only access in NB-IOT. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Updated pre-test conditions of test case 22.4.13. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | A conformant UE supporting only NTN RAT will not get the coverage.. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 22.4.13 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | TTCN Impact | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<Start of modified section>

### 22.4.13 NB-IoT / UE capability transfer / Success

22.4.13.1 Test Purpose (TP)

(1)

**with** { UE in RRC\_CONNECTED state }

**ensure that** {

**when** { UE receives an *UECapabilityEnquiry-NB* message }

**then** { UE transmits an *UECapabilityInformation-NB* message including UE radio access capability parameters }

}

22.4.13.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.6.3.3. Unless and otherwise stated these are Rel-13 requirements.

[TS 36.331, clause 5.6.3.3]

The UE shall:

1> for NB-IoT, set the contents of *UECapabilityInformation* message as follows:

2> include the UE Radio Access Capability Parameters within the *ue-Capability-Container*;

2> include ue-RadioPagingInfo;

2> submit the *UECapabilityInformation* message to lower layers for transmission, upon which the procedure ends;

22.4.13.3 Test description

22.4.13.3.1 Pre-test conditions

System Simulator:

- Ncell 1

- If UE supports NTN only access in NB-IoT (pc\_NB\_ntn\_only\_Connectivity\_EPC), System information combincation 8 as defined in TS 36.508 [18] clause 8.1.4.3.1.1 is used.

UE:

- If UE supports NTN only access in NB-IoT (pc\_NB\_ntn\_only\_Connectivity\_EPC), UE is configured with pre-configured UE location as defined in TS 36.508 [18] Clause 4.13.

Preamble:

- The UE is in State Connected Mode (State 2-NB) according to [18].

22.4.13.3.2 Test procedure sequence

Table 22.4.13.3.2-1: Main behaviour

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **St** | **Procedure** | **Message Sequence** | | **TP** | **Verdict** |
|  |  | **U - S** | **Message** |  |  |
| 1 | The SS transmits a *UECapabilityEnquiry-NB* message to request UE radio access capability information. | <-- | *UECapabilityEnquiry-NB* | - | - | |
| 2 | Check: Does the UE transmit a *UECapabilityInformation-NB* message? | --> | *UECapabilityInformation-NB* | 1 | P | |

22.4.13.3.3 Specific message contents

Table 22.4.13.3.3-1: UEcapabilityEnquiry-NB (step 1)

|  |
| --- |
| Derivation path: 36.508 clause 8.1.6 Table 8.1.6.1-16 |

Table 22.4.13.3.3-2: UECapabilityInformation-NB (step 2)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation path: 36.508 clause 8.1.6 Table 8.1.6.1-17 | | | |
| **Information Element** | **Value/Remark** | **Comment** | **Condition** |
| UECapabilityInformation-NB ::= SEQUENCE { |  |  |  |
| rrc-TransactionIdentifier | RRC-TransactionIdentifier-UL |  |  |
| criticalExtensions CHOICE { |  |  |  |
| ueCapabilityInformation-r13 SEQUENCE { |  |  |  |
| ue-Capability-Container-r13 SEQUENCE { |  |  |  |
| accessStratumRelease-r13 | Not checked | Value should be based on Rel of Access stratum supported |  |
| ue-Category-NB-r13 | nb1 |  |  |
| multipleDRB-r13 | Checked |  | pc\_NB\_MultiDRB |
| pdcp-Parameters-r13 SEQUENCE {} | Not present |  | NOT (pc\_User\_Plane\_CIoT\_Optimisation OR pc\_S1\_U\_DataTransfer) |
| pdcp-Parameters-r13 SEQUENCE {} | Not present or Present | Up to UE implementation (i.e this case is not exactly specified in TS 36.331 / TS 36.306 | (pc\_User\_Plane\_CIoT\_Optimisation OR pc\_S1\_U\_DataTransfer) AND NOT (pc\_ROHC\_profile0x0002 OR pc\_ROHC\_profile0x0003 OR pc\_ROHC\_profile0x0004 OR pc\_ROHC\_profile0x0006 OR pc\_ROHC\_profile0x0102 OR pc\_ROHC\_profile0x0103 OR OR pc\_ROHC\_profile0x0104) |
| pdcp-Parameters-r13 SEQUENCE { |  |  | (pc\_User\_Plane\_CIoT\_Optimisation OR pc\_S1\_U\_DataTransfer) AND (pc\_ROHC\_profile0x0002 OR pc\_ROHC\_profile0x0003 OR pc\_ROHC\_profile0x0004 OR pc\_ROHC\_profile0x0006 OR pc\_ROHC\_profile0x0102 OR pc\_ROHC\_profile0x0103 OR OR pc\_ROHC\_profile0x0104) |
| supportedROHC-Profiles-r13 SEQUENCE { |  |  |  |
| profile0x0002 | Checked |  | pc\_ROHC\_profile0x0002 |
| profile0x0003 | Checked |  | pc\_ROHC\_profile0x0003 |
| profile0x0004 | Checked |  | pc\_ROHC\_profile0x0004 |
| profile0x0006 | Checked |  | pc\_ROHC\_profile0x0006 |
| profile0x0102 | Checked |  | pc\_ROHC\_profile0x0102 |
| profile0x0103 | Checked |  | pc\_ROHC\_profile0x0103 |
| profile0x0104 | Checked |  | pc\_ROHC\_profile0x0104 |
| } |  |  |  |
| maxNumberROHC-ContextSessions | Not checked |  |  |
| } |  |  |  |
| phyLayerParameters-r13 SEQUENCE { |  |  |  |
| multiTone-r13 | Checked |  | pc\_NB\_MultiTone |
| multiCarrier-r13 | Checked |  | pc\_NB\_MultiCarrier |
| } |  |  |  |
| rf-Parameters-r13 SEQUENCE { |  |  |  |
| supportedBandList-r13 SEQUENCE (SIZE (1.. maxBands)) OF SEQUENCE { | n1 entries where n2 is the sum of pc\_eBandα\_Supp for α= 1 to maxFBI2(256) and n3 is the sum of reported bands without pc\_eBandα\_Supp for α= 1 to maxFBI2(256) | n1= n2 +n3 |  |
| band-r13 [α = 1..n2] | Any value β such that pc\_eBandβ\_Supp is TRUE and different from all eutra-Band[k] where k = 1 to α - 1 |  |  |
| powerClassNB-20dBm-r13 [α = 1..n] | Not checked |  |  |
| } |  |  |  |
| multiNS-Pmax-r13 | Not checked |  |  |
| } |  |  |  |
| dummy SEQUENCE {} | Not checked |  |  |
| } |  |  |  |
| ue-RadioPagingInfo-r13 SEQUENCE { |  |  |  |
| ue-Category-NB-r13 | nb1 |  |  |
| multiCarrierPaging-r14 | Checked |  | >= Rel-14 FDD: pc\_NB\_MultiCarrier\_Paging |
| mixedOperationMode-r15 | Checked |  | >= Rel-15 FDD: pc\_NB\_mixedOperationMode |
| wakeUpSignal-r15 | Checked |  | >= Rel-15 FDD: pc\_wakeUpSignal |
| wakeUpSignalMinGap-eDRX-r15 | Not checked |  |  |
| multiCarrierPagingTDD-r15 | Checked |  | >= Rel-15 TDD: pc\_NB\_MultiCarrier\_Paging\_TDD |
| } |  |  |  |
| lateNonCriticalExtension | Not checked |  |  |
| nonCriticalExtension SEQUENCE {} | Not checked |  | Rel-13 |
| nonCriticalExtension SEQUENCE { |  |  | > Rel-13 |
| ue-Capability-ContainerExt-r14 OCTET STRING { |  |  |  |
| ue-Category-NB-r14 | Checked |  | pc\_ue\_Category\_NB2 |
| mac-Parameters-r14 SEQUENCE { |  |  |  |
| dataInactMon-r14 | Not checked |  |  |
| rai-Support-r14 | Checked |  | pc\_NB\_Rai\_Support |
| } |  |  |  |
| phyLayerParameters-v1430 SEQUENCE { |  |  |  |
| multiCarrier-NPRACH-r14 | Checked |  | pc\_NB\_MultiCarrier\_NPRACH |
| twoHARQ-Processes-r14 | Checked |  | pc\_NB\_TwoHARQ\_Processes |
| } |  |  |  |
| rf-Parameters-v1430 SEQUENCE { |  |  |  |
| powerClassNB-14dBm-r14 | Not checked |  |  |
| } |  |  |  |
| nonCriticalExtension SEQUENCE { |  |  |  |
| phyLayerParameters-v1440 SEQUENCE { |  |  |  |
| interferenceRandomisation-r14 | Checked |  | FDD: pc\_NB\_InterferenceRandomisation |
| } |  |  |  |
| nonCriticalExtension SEQUENCE {} | Not checked |  | Rel-14 |
| nonCriticalExtension SEQUENCE { |  |  | > Rel-14 |
| lateNonCriticalExtension | Not checked |  |  |
| nonCriticalExtension SEQUENCE { |  |  |  |
| earlyData-UP-r15 | Not checked |  |  |
| rlc-Parameters-r15 SEQUENCE { |  |  |  |
| rlc-UM-r15 | Checked |  | pc\_NB\_RLC\_UM |
| } |  |  |  |
| mac-Parameters-v1530 SEQUENCE { |  |  |  |
| sr-SPS-BSR-r15 | Not checked |  |  |
| } |  |  |  |
| phyLayerParameters-v1530 SEQUENCE { |  |  |  |
| mixedOperationMode-r15 | Checked |  | FDD: pc\_NB\_mixedOperationMode |
| sr-WithHARQ-ACK-r15 | Checked |  | FDD: pc\_SR\_WithHARQ\_ACK |
| sr-WithoutHARQ-ACK-r15 | Checked |  | FDD: pc\_SR\_WithoutHARQ\_ACK |
| nprach-Format2-r15 | Checked |  | FDD: pc\_NB\_nprach\_Format2 |
| additionalTransmissionSIB1-r15 | Not checked |  |  |
| npusch-3dot75kHz-SCS-TDD-r15 | Not checked |  |  |
| } |  |  |  |
| tdd-UE-Capability-r15 SEQUENCE { |  |  | TDD |
| ue-Category-NB-r15 | Checked |  | pc\_ue\_Category\_NB2 |
| phyLayerParametersRel13-r15 SEQUENCE { |  |  |  |
| multiTone-r13 | Checked |  | pc\_NB\_MultiTone |
| multiCarrier-r13 | Checked |  | pc\_NB\_MultiCarrier |
| } |  |  |  |
| phyLayerParametersRel14-r15 SEQUENCE { |  |  |  |
| multiCarrier-NPRACH-r14 | Checked |  | pc\_NB\_MultiCarrier\_NPRACH |
| twoHARQ-Processes-r14 | Checked |  | pc\_NB\_TwoHARQ\_Processes |
| } |  |  |  |
| phyLayerParameters-v1530 SEQUENCE { |  |  |  |
| mixedOperationMode-r15 | Not checked |  |  |
| sr-WithHARQ-ACK-r15 | Not checked |  |  |
| sr-WithoutHARQ-ACK-r15 | Not checked |  |  |
| nprach-Format2-r15 | Not checked |  |  |
| additionalTransmissionSIB1-r15 | Not checked |  |  |
| npusch-3dot75kHz-SCS-TDD-r15 | Not checked |  |  |
| } |  |  |  |
| } |  |  |  |
| nonCriticalExtension SEQUENCE {} | Not checked |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

<End of modified section>