**3GPP TSG-RAN WG2 Meeting #117-e *R2-220xxxx***

**Electronic, 21st February – 3rd March 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.331** | **CR** | **2879** | **rev** | **1** | **Current version:** | **16.7.0** |  |
|  |
| *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 | **X** | Radio Access Network | **X** | Core Network |  |

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|  |
| ***Title:***  | Addition of missing description on mobility support for 5G SRVCC to 3G |
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| ***Source to WG:*** | Lenovo, Motorola Mobility |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | SRVCC\_NR\_to\_UMTS-Core |  | ***Date:*** | 2022-02-24 |
|  |  |  |  |  |
| ***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 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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | 5G SRVCC to 3G has been specified in Rel-16, however some description with regards to mobility support to UTRA-FDD is missing.  |
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| ***Summary of change:*** | * In 4.2.1 the mobility support to UTRA-FDD has been added in the description of RRC\_CONNECTED state. Furthermore, a new figure illustrating the mobility support between NR/5GC and UTRA-FDD has been added.
* In 5.4.1 the mobility support to UTRA-FDD has been added.

**Impact analysis**Impacted 5G architecture options:NR SAImpacted functionality: 5G SRVCC to 3GInter-operability:There are no interoperability issues. |
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| ***Consequences if not approved:*** | The specification of 5G SRVCC to 3G remains incomplete. |
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| ***Clauses affected:*** | 4.2.1, 5.4.1 |
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|  | **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 changes*

## 4.2 Architecture

### 4.2.1 UE states and state transitions including inter RAT

A UE is either in RRC\_CONNECTED state or in RRC\_INACTIVE state when an RRC connection has been established. If this is not the case, i.e. no RRC connection is established, the UE is in RRC\_IDLE state. The RRC states can further be characterised as follows:

**- RRC\_IDLE**:

- A UE specific DRX may be configured by upper layers;

- UE controlled mobility based on network configuration;

- The UE:

- Monitors Short Messages transmitted with P-RNTI over DCI (see clause 6.5);

- Monitors a Paging channel for CN paging using 5G-S-TMSI;

- Performs neighbouring cell measurements and cell (re-)selection;

- Acquires system information and can send SI request (if configured);

- Performs logging of available measurements together with location and time for logged measurement configured UEs;

- Performs idle/inactive measurements for idle/inactive measurement configured UEs.

**- RRC\_INACTIVE**:

- A UE specific DRX may be configured by upper layers or by RRC layer;

- UE controlled mobility based on network configuration;

- The UE stores the UE Inactive AS context;

- A RAN-based notification area is configured by RRC layer;

The UE:

- Monitors Short Messages transmitted with P-RNTI over DCI (see clause 6.5);

- Monitors a Paging channel for CN paging using 5G-S-TMSI and RAN paging using fullI-RNTI;

- Performs neighbouring cell measurements and cell (re-)selection;

- Performs RAN-based notification area updates periodically and when moving outside the configured RAN-based notification area;

- Acquires system information and can send SI request (if configured);

- Performs logging of available measurements together with location and time for logged measurement configured UEs;

- Performs idle/inactive measurements for idle/inactive measurement configured UEs.

**- RRC\_CONNECTED:**

- The UE stores the AS context;

- Transfer of unicast data to/from UE;

- At lower layers, the UE may be configured with a UE specific DRX;

- For UEs supporting CA, use of one or more SCells, aggregated with the SpCell, for increased bandwidth;

- For UEs supporting DC, use of one SCG, aggregated with the MCG, for increased bandwidth;

- Network controlled mobility within NR, to/from E-UTRA and to UTRA-FDD;

- The UE:

- Monitors Short Messages transmitted with P-RNTI over DCI (see clause 6.5), if configured;

- Monitors control channels associated with the shared data channel to determine if data is scheduled for it;

- Provides channel quality and feedback information;

- Performs neighbouring cell measurements and measurement reporting;

- Acquires system information;

- Performs immediate MDT measurement together with available location reporting.

Figure 4.2.1-1 illustrates an overview of UE RRC state machine and state transitions in NR. A UE has only one RRC state in NR at one time.



Figure 4.2.1-1: UE state machine and state transitions in NR

Figure 4.2.1-2 illustrates an overview of UE state machine and state transitions in NR as well as the mobility procedures supported between NR/5GC, E-UTRA/EPC and E-UTRA/5GC.



Figure 4.2.1-2: UE state machine and state transitions between NR/5GC, E-UTRA/EPC and E-UTRA/5GC

Figure 4.2.1-x illustrates the mobility procedure supported between NR/5GC and UTRA-FDD.



Figure 4.2.1-x: Mobility procedure supported between NR/5GC and UTRA-FDD

*Next change*

## 5.4 Inter-RAT mobility

### 5.4.1 Introduction

Network controlled inter-RAT mobility between NR and E-UTRA, where E-UTRA can be connected to either EPC or 5GC, and from NR to UTRA-FDD is supported.

*End of changes*