**3GPP TSG-CT WG1 Meeting #131-eC1-214450**

**E-meeting, 19-27 August 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **24.501** | **CR** | **3279** | **rev** | **-** | **Current version:** | **17.3.1** |  |
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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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| ***Title:***  | Handling of N1 mode capability for non-3GPP access for voice domain selection |
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| ***Source to WG:*** | MediaTek Inc. |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5-non3GPP, 5GProtoc17 |  | ***Date:*** | 2021-08-09 |
|  |  |  |  |  |
| ***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 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:*** | As specified in TS 24.501 sub-clause 4.3.2: if IMS voice is not available over 3GPP access, and the UE's usage setting is "voice centric", and the UE operates in single-registration mode, the UE shall disable the N1 mode capability for 3GPP access.However in the same sub-clause, the UE is required to also disable N1 mode capability for non-3GPP access in the following condition:*When IMS voice is not available over non-3GPP access, if the UE's usage setting is "voice centric" and the UE operates in single-registration mode, then:**a) if the UE is only registered over non-3GPP access, the UE shall disable the N1 mode capability for non-3GPP access (see subclause 4.9.3); or**b) if the UE is registered over both 3GPP access and non-3GPP access and IMS voice is not available also over 3GPP access, the UE shall disable the N1 mode capability for non-3GPP access (see subclause 4.9.3).*Since the N1 mode capability for 3GPP access has already been disabled, the UE would register to another RAT for voice service, in this case it is not necessary to disable the N1 mode capability for non-3GPP access. |
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| ***Summary of change:*** | In the case that the UE is registered over both 3GPP access and non-3GPP access and IMS voice is not available over both accesses, it is not necessary to to disable the N1 mode capability for non-3GPP access. |
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| ***Consequences if not approved:*** | In the case that the UE is registered over both 3GPP access and non-3GPP access, IMS voice is not available over both accesses, and UE registers to other 3GPP RAT for voice service, disabling the the N1 mode capability for non-3GPP access may interrupt the on-going session over non-3GPP access and unnecessarily impact user experience. |
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| ***Clauses affected:*** | 4.3.2 |
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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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\*\*\* Next change \*\*\*\*\*

### 4.3.2 Domain selection for UE originating sessions / calls

The behaviour of the UE for domain selection is determined by:

a) the UE usage setting;

b) the availability of IMS voice; and

c) whether the UE operates in single-registration mode or dual-registration mode (see 3GPP TS 23.501 [8]).

In the present document the condition "the UE supports IMS voice over 3GPP access" evaluates to "true" if at least one of the following is fulfilled:

1) the UE supports IMS voice over NR connected to 5GCN;

2) the UE supports IMS voice over E-UTRA connected to 5GCN; or

3) the UE supports IMS voice in EPS.

In the present document the condition "the UE does not support IMS voice over 3GPP access" evaluates to "true" if the condition "the UE supports IMS voice over 3GPP access" evaluates to "false".

In the present document the condition "the UE supports IMS voice over non-3GPP access" evaluates to "true" if the UE supports IMS voice over non-3GPP access connected to 5GCN.

In the present document the condition "the UE does not support IMS voice over non-3GPP access" evaluates to "true" if the condition "the UE supports IMS voice over non-3GPP access" evaluates to "false".

In the present document, "IMS voice not available" is determined per access type independently, i.e. 3GPP access or non-3GPP access.

In the present document, "IMS voice not available" refers to one of the following conditions:

a) the UE does not support IMS voice;

b) the UE supports IMS voice, but the network indicates in the REGISTRATION ACCEPT message that IMS voice over PS sessions are not supported; or

c) the UE supports IMS voice, the network indicates in the REGISTRATION ACCEPT message that IMS voice over PS sessions are supported, but the upper layers:

1) provide no indication that the UE is available for voice call in the IMS within a manufacturer determined period of time; or

2) indicate that the UE is not available for voice calls in the IMS.

NOTE 1: If conditions a and b evaluate to false, the upper layers need time to attempt IMS registration. In the event an indication from the upper layers that the UE is available for voice calls in the IMS takes longer than the manufacturer determined period of time (e.g. due to delay when attempting IMS registration or due to delay in obtaining a QoS flow for SIP signalling), the NAS layer assumes the UE is not available for voice calls in the IMS.

Other conditions may exist but these are implementation specific.

In the present document, "IMS voice available" applies when "IMS voice not available" does not apply.

When IMS voice is not available over 3GPP access, if the UE's usage setting is "voice centric", the UE operates in single-registration mode, and the UE:

a) does not have a persistent PDU session, and:

1) if the UE is only registered over 3GPP access, or if the UE is registered over both 3GPP access and non-3GPP access and IMS voice is not available over non-3GPP access, the UE shall disable the N1 mode capability for 3GPP access and proceed as specified in subclause 4.9.2 with modifications described below;. or

2) if the UE is registered over both 3GPP access and non-3GPP access and IMS voice is available over non-3GPP access, the UE may disable the N1 mode capability for 3GPP access and proceed as specified in subclause 4.9.2 with modifications described below; or

b) has a persistent PDU session, then the UE waits until the radio bearer associated with the persistent PDU session has been released. When the radio bearer associated with the persistent PDU session has been released, then:

1) if the UE is only registered over 3GPP access, or if the UE is registered over both 3GPP access and non-3GPP access and IMS voice is not available over non-3GPP access,the UE shall disable the N1 mode capability for 3GPP access and proceed as specified in subclause 4.9.2 with modifications described below; or

2) If the UE is registered over both 3GPP access and non-3GPP access and IMS voice is available over non-3GPP access, the UE may disable the N1 mode capability for 3GPP access and proceed as specified in subclause 4.9.2 with modifications described below.

The following modifications are applied to the procedure in subclause 4.9.2 for disabling the N1 mode capability for 3GPP access, if the UE's usage setting is "voice centric" and the UE operates in single-registration mode:

a) in item a) of subclause 4.9.2, the UE shall attempt to select an E-UTRA cell connected to EPC. If such a cell is found, the UE shall then perform voice domain selection procedures as defined in 3GPP TS 24.301 [15]; and

b) in item b) of subclause 4.9.2, if an E-UTRA cell connected to EPC cannot be found, the UE shall attempt to select another supported radio access technology which supports voice services.

When IMS voice is not available over non-3GPP access, if the UE's usage setting is "voice centric" and the UE operates in single-registration mode, then:

a) if the UE is only registered over non-3GPP access, the UE shall disable the N1 mode capability for non-3GPP access (see subclause 4.9.3); or

b) if the UE is registered over both 3GPP access and non-3GPP access and IMS voice is not available also over 3GPP access, the UE may disable the N1 mode capability for non-3GPP access (see subclause 4.9.3).

NOTE 2: The UE can register over 3GPP access in another mode, e.g., S1 mode, for voice service, and in this case the UE can keep the N1 mode capability for non-3GPP access enabled.