**3GPP TSG-CT WG1 Meeting #133-eC1-21xxxx**

**E-meeting, 11-19 November 2021**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.587** | **CR** | **0221** | **rev** | **1** | **Current version:** | **17.3.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Introducing the NR Tx Profile for NR PC5 and using it as a configuration parameter for broadcast and groupcast modes | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eV2XARC\_Ph2 | | | | |  | ***Date:*** | | | 2021-10-27 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The NR Tx profile for NR PC5 is introduced in stage-2 V2X spec TS 23.287 using the CR 0165 (S2-2107841).  The NR Tx Profile is needed to determine whether the DRX operation for broadcast and groupcast modes for V2X communication over PC5.is needed or not.  This CR introduces the NR Tx Profile into stage-3 spec and considers it in the configuration parameters mapping rules. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1- Introducing the definition of NR Tx Profile, by referring to TS 23.287  2- Considering the NR Tx profiles in the configuration parameters mapping rules of the V2X communication over PC5 for broadcast mode and groupcast mode. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | NR Tx profile is not introduced and hence no possibility to use/calculate DRX parameters. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.1, 5.2.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 23.287 CR 0165 (S2-2107841) | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\*\* First change \*\*\*\*\*

## 3.1 Terms

For the purposes of the present document, the terms given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

**E-UTRA-PC5:** PC5 reference point over E-UTRA. The term E-UTRA-PC5 used in the present document corresponds to the term LTE PC5 defined in 3GPP TS 23.287 [3].

**NR-PC5:** PC5 reference point over NR. The term NR-PC5 used in the present document corresponds to the term NR PC5 defined in 3GPP TS 23.287 [3].

**PC5 QoS flow context:** A context which includes a set of V2X service identifiers, a PQFI value and a set of PC5 QoS parameters.

**PC5 QoS rule:** A rule which includes a PC5 QoS rule identifier, a PQFI value, a precedence value and optionally a set of packet filters. The PC5 QoS rule is associated with a PC5 QoS flow context.

**V2X service identifier**: an identifier of a V2X service, e.g. PSID, ITS-AID, or AID of the V2X application. The term V2X service identifier used in the present document corresponds to the term V2X service type defined in 3GPP TS 23.287 [3].

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.287 [3] apply:

**Application Identifier (AID)**

**Intelligent Transport Systems (ITS)**

**ITS Application Identifier (ITS-AID)**

**NR Tx Profile**

**Provider Service Identifier (PSID)**

**V2X communication**

**V2X message**

**V2X service**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.501 [6] apply:

**5G-EA**

**5G-IA**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.501 [6] apply:

**UE local configuration**

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

### 5.2.3 Configuration parameters for V2X communication over PC5

The configuration parameters for V2X communication over PC5 consist of:

a) a validity timer for the validity of the configuration parameters for V2X communication over PC5;

b) a list of PLMNs and RATs in which the UE is authorized to use V2X communication over PC5 when the UE is served by E-UTRA or served by NR. Each entry of the list contains a PLMN ID and RATs in which the UE is authorized to use V2X communication over PC5;

c) an indication of whether the UE is authorized to use V2X communication over PC5 when the UE is not served by E-UTRA and not served by NR;

d) list of RATs in which the UE is authorized to use V2X communication over PC5 and the radio parameters of the RAT for V2X communication over PC5 applicable per geographical area with an indication of whether these radio parameters of the RAT are "operator managed" or "non-operator managed" when the UE is not served by E-UTRA and not served by NR;

e) void

f) optionally, a list of V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules. Each mapping rule contains one or more V2X service identifiers, PC5 RAT(s) and:

1) if the PC5 RAT(s) include E-UTRA-PC5, Tx profiles corresponding to the E-UTRA-PC5; or

2) if the PC5 RAT(s) include NR-PC5, optionally NR Tx profile corresponding to the NR-PC5 for broadcast mode V2X communication over PC5 and groupcast mode V2X communication over PC5, where if the UE determines that the value of a V2X service identifier that has an associated NR Tx profile was used for a V2X service identifier that does not have an associated NR Tx profile, the UE shall ignore the NR Tx profile for that V2X service identifier,

NOTE: The value of a V2X service identifier that has an associated NR Tx profile is different than the value of any V2X service identifier that was used without having associated NR Tx profiles in previous releases.

g) configuration parameters for privacy support, consisting of:

1) a list of V2X services requiring privacy. Each entry of the list contains one or more V2X service identifiers and one or more geographical areas where the privacy is required; and

2) a privacy timer value as specified in 3GPP TS 24.588 [7] clause 5.3;

h) configuration parameters for a V2X communication over PC5 in E-UTRA-PC5, consisting of:

1) a list of V2X service identifier to destination layer-2 ID mapping rules. Each mapping rule contains one or more V2X service identifiers and the destination layer-2 ID;

2) optionally, a default destination layer-2 ID;

3) a list of PPPP to PDB mapping rules. Each mapping rule contains a ProSe Per-Packet Priority (PPPP) and a Packet Delay Budget (PDB);

4) optionally, list of V2X service identifier to V2X E-UTRA frequency mapping rules. Each mapping rule contains one or more V2X service identifiers and the V2X E-UTRA frequencies with associated geographical areas; and

5) optionally, a list of the V2X services authorized for ProSe Per-Packet Reliability (PPPR). Each entry of the list contains one or more V2X service identifiers and a ProSe Per-Packet Reliability (PPPR) value; and

i) configuration parameters for a V2X communication over PC5 in NR-PC5, consisting of:

1) optionally, a list of V2X service identifier to V2X NR frequency mapping rules. Each mapping rule contains one or more V2X service identifiers and the V2X NR frequencies with associated geographical areas;

2) a list of V2X service identifier to destination layer-2 ID for broadcast mapping rules. Each mapping rule contains one or more V2X service identifiers and the destination layer-2 ID for broadcast;

3) optionally, a default destination layer-2 ID for broadcast;

4) a list of V2X service identifier to destination layer-2 ID for groupcast mapping rules. Each mapping rule contains one or more V2X service identifiers and the destination layer-2 ID for groupcast;

5) a list of V2X service identifier to default destination layer-2 ID for unicast initial signalling mapping rules. Each mapping rule contains one or more V2X service identifiers and the default destination layer-2 ID for initial signalling to establish unicast connection;

6) a list of V2X service identifier to PC5 QoS parameters mapping rules. The PC5 QoS parameters are specified in clause 5.4.2 of 3GPP TS 23.287 [3];

7) an AS configuration, including a list of SLRB mapping rules applicable when the UE is not served by E-UTRA and is not served by NR. Each SLRB mapping rule contains a PC5 QoS profile and an SLRB. The PC5 QoS profile contains the following parameters:

i) the PC5 QoS profile contains a PQI;

ii) if the PQI of the PC5 QoS profile identifies a GBR QoS, the PC5 QoS profile contains a PC5 flow bit rates consisting of a guaranteed flow bit rate (GFBR) and a maximum flow bit rate (MFBR);

iii) if the PQI of the PC5 QoS profile identifies a non-GBR QoS, the PC5 QoS profile contains the PC5 link aggregated bit rate consisting of a per link aggregate maximum bit rate (PC5 LINK-AMBR);

NOTE: PC5 link aggregated bit rate is only used for unicast mode communications over PC5.

iv) the PC5 QoS profile contains a range, which is only used for groupcast mode communications over PC5; and

v) the PC5 QoS profile can contain the priority level, the averaging window, and the maximum data burst volume. If one or more of the priority level, the averaging window or the maximum data burst volume are not contained in the PC5 QoS profile, their default values apply;

8) a list of NR-PC5 unicast security policies. Each entry in the list contains an NR-PC5 unicast security policy composed of:

i) one or more V2X service identifiers;

ii) the signalling integrity protection policy for the V2X service identifier(s);

iii) the signalling ciphering policy for the V2X service identifier(s);

iv) the user plane integrity protection policy for the V2X service identifier(s);

v) the user plane ciphering policy for the V2X service identifier(s); and

vi) one or more geographical areas where the NR-PC5 unicast security policy applies;

9) a list of V2X service identifier to default mode of communication mapping rules. Each mapping rule contains one or more V2X service identifiers and the default mode of communication (one of unicast, groupcast or broadcast); and

10) for broadcast mode and groupcast mode, PC5 DRX configuration when the UE is not served by E-UTRA and not served by NR.

\*\*\*\*\* End of changes \*\*\*\*\*