**3GPP TSG-CT WG1 Meeting #123-eC1-202704**

**Electronic meeting, 16-24 April 2020 (Revision of C1-202117)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.587** | **CR** | **0009** | **rev** | **1** | **Current version:** | **16.0.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

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

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Non-standardized QoS characteristics over PC5-S | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | OPPO | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eV2XARC | | | | |  | ***Date:*** | | | 2020-4-22 |
|  |  | | | |  | |  | | |  |
| ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In subclause 5.4.3.1 in TS 23.287 v16.2.0, there are the following descriptions:  Standardized or pre-configured PC5 QoS characteristics, are indicated through the PQI value.  V2X layer may derive non-standardized PC5 QoS characteristics by overriding the standardized or pre-configured value of PC5 QoS characteristics based on V2X Application Requirements from V2X application layer and provide the whole set of non-standardized PC5 QoS characteristics to AS layer.  NOTE: Non-standardized PC5 QoS characteristics only applies to UE autonomous resources selection mode.  Therefore, it is possible that the peer UEs exchange the QoS characteristics over PC5-Signalling in direct link establishment procedure or direct link modification procedure.  The non-standardized QoS characteristics should be added and the corresponding FFS should be removed. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Non-standardized QoS characteristics are added to the format of PC5 QoS flow descriptions.  2. Remove the FFS. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Non-standardized QoS characteristics cannot be supported in stage 3. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.4.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\* \* \* First Change \* \* \* \*

### 8.4.5 PC5 QoS flow descriptions

The purpose of the PC5 QoS flow descriptions information element is to indicate a set of PC5 QoS flow descriptions to be used by the UE over the direct link, where each PC5 QoS flow description is a set of parameters as described in clause 5.4.2 of 3GPP TS 23.287 [3].

The PC5 QoS flow descriptions is a type 6 information element with a minimum length of 6 octets. The maximum length for the information element is 65538 octets.

The PC5 QoS flow descriptions information element is coded as shown in figure 8.4.5.1, figure 8.4.5.2, figure 8.4.5.3, figure 8.4.5.4, and table 8.4.5.1.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| PC5 QoS flow descriptions IEI | | | | | | | | octet 1 |
| Length of PC5 QoS flow descriptions contents | | | | | | | | octet 2  octet 3 |
| PC5 QoS flow description 1 | | | | | | | | octet 4  octet u |
| PC5 QoS flow description 2 | | | | | | | | octet u+1  octet v |
| ... | | | | | | | | octet v+1  octet w |
| PC5 QoS flow description n | | | | | | | | octet w+1  octet x |

Figure 8.4.5.1: PC5 QoS flow descriptions information element

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | | 6 | | 5 | | 4 | | 3 | 2 | | 1 |  |
| 0  Spare | | 0  Spare | PQFI | | | | | | | | | | octet 4 |
| Operation code | | | | 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | 0  Spare | | octet 5 |
| 0  Spare | | E | Number of parameters | | | | | | | | | | octet 6 |
| Parameters list | | | | | | | | | | | | | octet 7\*  octet u\* |

Figure 8.4.5.2: PC5 QoS flow description

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Parameter 1 | | | | | | | | octet 7  octet m |
| Parameter 2 | | | | | | | | octet m+1  octet n |
| ... | | | | | | | | octet n+1  octet o |
| Parameter n | | | | | | | | octet o+1  octet u |

Figure 8.4.5.3: Parameters list

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Parameter identifier | | | | | | | | octet 7 |
| Length of parameter contents | | | | | | | | octet 8 |
| Parameter contents | | | | | | | | octet 9  octet m |

Figure 8.4.5.4: Parameter

Table 8.4.4.1: PC5 QoS flow descriptions information element

|  |
| --- |
| PC5 QoS flow identifier (PQFI) (bits 6 to 1 of octet 4)  PQFI field contains the PC5 QoS flow identifier.  Bits  6 5 4 3 2 1  0 0 0 0 0 1 PQFI 1  to  1 1 1 1 1 1 PQFI 63  The UE shall not set the PQFI value to 0. |
| Operation code (bits 8 to 6 of octet 5)  Bits  8 7 6  0 0 1 Create new PC5 QoS flow description  0 1 0 Delete existing PC5 QoS flow description  0 1 1 Modify existing PC5 QoS flow description  All other values are reserved. |
| E bit (bit 7 of octet 6)  For the "create new PC5 QoS flow description" operation, the E bit is encoded as follows:  Bit 7  0 reserved  1 parameters list is included  For the "Delete existing PC5 QoS flow description" operation, the E bit is encoded as follows:  Bit 7  0 parameters list is not included  1 reserved  For the "modify existing PC5 QoS flow description" operation, the E bit is encoded as follows:  Bit 7  0 extension of previously provided parameters  1 replacement of all previously provided parameters  If the E bit is set to "parameters list is not included", the number of parameters field has zero value. If the E bit is set to "parameters list is included", the number of parameters field has non-zero value. If the E bit is set to "extension of previously provided parameters" or "replacement of all previously provided parameters", the number of parameters field has non-zero value. If the E bit is set to "extension of previously provided parameters" and one of the parameters in the new parameters list already exists in the previously provided parameters, the parameter shall be set to the new value.  Number of parameters (bits 6 to 1 of octet 6)  The number of parameters field contains the binary coding for the number of parameters in the parameters list field. The number of parameters field is encoded in bits 6 through 1 of octet 6 where bit 6 is the most significant and bit 1 is the least significant bit.  Parameters list (octets 7 to u)  The parameters list contains a variable number of parameters.  Each parameter included in the parameters list is of variable length and consists of:  - a parameter identifier (1 octet);  - the length of the parameter contents (1 octet); and - the parameter contents itself (variable amount of octets).  The parameter identifier field is used to identify each parameter included in the parameters list and it contains the hexadecimal coding of the parameter identifier. Bit 8 of the parameter identifier field contains the most significant bit and bit 1 contains the least significant bit. In this version of the protocol, the following parameter identifiers are specified:  - 01H (PQI); - 02H (GFBR uplink);  - 03H (MFBR downlink);  - 04H (MFBR uplink);  - 05H (MFBR downlink);  - 06H (Averaging window);  - 05H (Resource type);  - 06H (Default priority level);  - 07H (Packet delay budget);  - 08H (Packet error rate);  - 09H (Default maximum data burst volume).  If the parameters list contains a parameter identifier that is not supported by the receiving entity the corresponding parameter shall be discarded.  The length of parameter contents field contains the binary coded representation of the length of the parameter contents field. The first bit in transmission order is the most significant bit.  When the parameter identifier indicates PQI, the parameter contents field contains the binary representation of PQI that is one octet in length.  PQI:  Bits  8 7 6 5 4 3 2 1  0 0 0 0 0 0 0 0 Reserved  0 0 0 0 0 0 0 1  to Spare  0 0 0 1 0 1 0 0  0 0 0 1 0 1 0 1 PQI 21  0 0 0 1 0 1 1 0 PQI 22  0 0 0 1 0 1 1 1 PQI 23  0 0 0 1 1 0 0 0  to Spare  0 0 1 1 0 1 1 0  0 0 1 1 0 1 1 1 PQI 55  0 0 1 1 1 0 0 0 PQI 56  0 0 1 1 1 0 0 1 PQI 57  0 0 1 1 1 0 1 0 PQI 58  0 0 1 1 1 0 1 1 PQI 59  0 0 1 1 1 1 0 0  to Spare  0 1 0 1 1 0 0 1  0 1 0 1 1 0 1 0 PQI 90  0 1 0 1 1 0 1 1 PQI 91  0 1 0 1 1 1 0 0  to Spare  0 1 1 1 1 1 1 1  1 0 0 0 0 0 0 0  to Operator-specific PQIs  1 1 1 1 1 1 1 0  1 1 1 1 1 1 1 1 Reserved  The UE shall consider all other values not explicitly defined in this version of the protocol as unsupported.  When the parameter identifier indicates "GFBR uplink", the parameter contents field contains one octet indicating the unit of the guaranteed flow bit rate for uplink followed by two octets containing the value of the guaranteed flow bit rate for uplink.  Unit of the guaranteed flow bit rate for uplink (octet 1)  Bits  8 7 6 5 4 3 2 1  0 0 0 0 0 0 0 0 value is not used  0 0 0 0 0 0 0 1 value is incremented in multiples of 1 Kbps  0 0 0 0 0 0 1 0 value is incremented in multiples of 4 Kbps  0 0 0 0 0 0 1 1 value is incremented in multiples of 16 Kbps  0 0 0 0 0 1 0 0 value is incremented in multiples of 64 Kbps  0 0 0 0 0 1 0 1 value is incremented in multiples of 256 Kbps  0 0 0 0 0 1 1 0 value is incremented in multiples of 1 Mbps  0 0 0 0 0 1 1 1 value is incremented in multiples of 4 Mbps  0 0 0 0 1 0 0 0 value is incremented in multiples of 16 Mbps  0 0 0 0 1 0 0 1 value is incremented in multiples of 64 Mbps  0 0 0 0 1 0 1 0 value is incremented in multiples of 256 Mbps  0 0 0 0 1 0 1 1 value is incremented in multiples of 1 Gbps  0 0 0 0 1 1 0 0 value is incremented in multiples of 4 Gbps  0 0 0 0 1 1 0 1 value is incremented in multiples of 16 Gbps  0 0 0 0 1 1 1 0 value is incremented in multiples of 64 Gbps  0 0 0 0 1 1 1 1 value is incremented in multiples of 256 Gbps  0 0 0 1 0 0 0 0 value is incremented in multiples of 1 Tbps  0 0 0 1 0 0 0 1 value is incremented in multiples of 4 Tbps  0 0 0 1 0 0 1 0 value is incremented in multiples of 16 Tbps  0 0 0 1 0 0 1 1 value is incremented in multiples of 64 Tbps  0 0 0 1 0 1 0 0 value is incremented in multiples of 256 Tbps  0 0 0 1 0 1 0 1 value is incremented in multiples of 1 Pbps  0 0 0 1 0 1 1 0 value is incremented in multiples of 4 Pbps  0 0 0 1 0 1 1 1 value is incremented in multiples of 16 Pbps  0 0 0 1 1 0 0 0 value is incremented in multiples of 64 Pbps  0 0 0 1 1 0 0 1 value is incremented in multiples of 256 Pbps  Other values shall be interpreted as multiples of 256 Pbps in this version of the protocol.  Value of the guaranteed flow bit rate for uplink (octets 2 and 3)  Octets 2 and 3 represent the binary coded value of the guaranteed flow bit rate for uplink in units defined by the unit of the guaranteed flow bit rate for uplink.  When the parameter identifier indicates "GFBR downlink", the parameter contents field contains one octet indicating the unit of the guaranteed flow bit rate for downlink followed by two octets containing the value of the guaranteed flow bit rate for downlink.  Unit of the guaranteed flow bit rate for downlink (octet 1)  The coding is identical to that of the unit of the guaranteed flow bit rate for uplink.  Value of the guaranteed flow bit rate for downlink (octets 2 and 3)  Octets 2 and 3 represent the binary coded value of the guaranteed flow bit rate for downlink in units defined by the unit of the guaranteed flow bit rate for downlink.  When the parameter identifier indicates "MFBR uplink", the parameter contents field contains the one octet indicating the unit of the maximum flow bit rate for uplink followed by two octets containing the value of maximum flow bit rate for uplink.  Unit of the maximum flow bit rate for uplink (octet 1)  The coding is identical to that of the unit of the guaranteed flow bit rate for uplink.  Value of the maximum flow bit rate for uplink (octets 2 and 3)  Octets 2 and 3 represent the binary coded value of the maximum flow bit rate for uplink in units defined by the unit of the maximum flow bit rate for uplink.  When the parameter identifier indicates "MFBR downlink", the parameter contents field contains one octet indicating the unit of the maximum flow bit rate for downlink followed by two octets containing the value of the maximum flow bit rate for downlink.  Unit of the maximum flow bit rate for downlink (octet 1)  The coding is identical to that of the unit of the guaranteed flow bit rate for uplink.  Value of the maximum flow bit rate for downlink (octets 2 and 3)  Octets 2 and 3 represent the binary coded value of the maximum flow bit rate for downlink in units defined by the unit of the maximum flow bit rate for downlink.  When the parameter identifier indicates "averaging window", the parameter contents field contains the binary representation of the averaging window for both uplink and downlink in milliseconds and the parameter contents field is two octets in length. |
| When the parameter identifier indicates "resource type", the parameter contents field contains the binary representation of the resource type that is one octet in length.  Resource type:  Bits  8 7 6 5 4 3 2 1  0 0 0 0 0 0 0 0 Reserved  0 0 0 0 0 0 0 1 Non-GBR  0 0 0 0 0 0 1 0 GBR  0 0 0 0 0 0 1 1 Delay critical GBR  0 0 0 0 0 1 0 0  to Spare  1 1 1 1 1 1 1 1  When the parameter identifier indicates "default priority level", the parameter contents field contains the binary representation of the default priority level that is one octet in length.  Default priority level:  Bits  8 7 6 5 4 3 2 1  0 0 0 0 0 0 0 0 Reserved  0 0 0 0 0 0 0 1 1  0 0 0 0 0 0 1 0 2  0 0 0 0 0 0 1 1 3  0 0 0 0 0 1 0 0 4  0 0 0 0 0 1 0 1 5  0 0 0 0 0 1 1 0 6  0 0 0 0 0 1 1 1 7  0 0 0 0 1 0 0 0 8  0 0 0 0 1 0 0 1  to Spare  1 1 1 1 1 1 1 1  When the parameter identifier indicates "packet delay budget", the parameter contents field contains the binary representation of the packet delay budget for both uplink and downlink in milliseconds and the parameter contents field is two octets in length.  When the parameter identifier indicates "packet error rate", the parameter contents field contains the binary representation of the power of 10-1 for both uplink and downlink and the parameter contents field is one octet in length.  When the parameter identifier indicates "default maximum data burst volume", the parameter contents field contains the binary representation of the default maximum data burst volume for both uplink and downlink in bytes and the parameter contents field is two octets in length. |
| NOTE: The GFBR uplink and GFBR downlink have the same value. The MFBR uplink and MFBR downlink have the same value. |

Editor's note: Whether GFBR and MFBR for both uplink and downlink are necessary is FFS.

\* \* \* End of Changes \* \* \* \*