**3GPP TSG-CT WG1 Meeting #129-eC1-21hhhh**

**Electronic meeting, 19–23 April 2021 *was* C1-212984**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.193** | **CR** | **0030** | **rev** | **3** | **Current version:** | **17.0.1** |  |
|  | | | | | | | | |
| *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 | **X** |

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| ***Title:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ATSSS\_Ph2 | | | | |  | ***Date:*** | | | 2021-05-26 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | PMFP is enhanced to support PLR (packet loss rate) measurement. It has been specified in clause 5.32.5.2a of TS 23.501. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Specify the procedures and messages/IE encoding to support PLR measurement.  Timer T103, T104, T203 and T204 are defined. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | PLR measurement is not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.4.x (new), 5.4.y (new), 6.2.1.1, 6.2.2.1, 6.2.1.a (new), 6.2.1.b (new), 6.2.1.c (new), 6.2.1.d (new), 6.2.2.x, 6.2.2.y, 7.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | Rev#1 (CT1#129e)  Rev#2 (CT1#130e)   * Change the timing of starting counting based on S2-2103305 which is agreed in SA2#144e. | | | | | | | | |

\* \* \* 1st Change \* \* \* \*

### 5.4.x UE-initiated PLR measurement procedure

#### 5.4.x.1 General

The purpose of the UE-initiated PLR measurement procedure is to enable the UE to measure the PLR of UL traffic to the UPF over an access of an MA PDU session.

The UE-initiated PLR measurement procedure can be performed over an access of an MA PDU session only when the UE has user-plane resources on the access of the MA PDU session. The UE-initiated PLR measurement procedure can be performed for the QoS flow of the default QoS rule or the QoS flow of the non-default QoS rule.

The UE-initiated PLR measurement procedure consists of following two procedures:

a) UE-initiated PLR count procedure (see clause 5.4.x.2); and

b) UE-initiated PLR report procedure (see clause 5.4.x.3).

The UE shall not initiate another PLR measurement procedure over the same QoS flow on the same access until current UE-initiated PLR measurement procedure is completed.

An example of UE-initiated PLR measurement procedure which consists of the two procedures is shown in figure 5.4.x.1-1.



Figure 5.4.x.1-1: UE-initiated PLR measurement procedure

1. The UE sends a PMFP PLR count request message to the UPF. If the UE-initiated PLR measurement is to meaure the PLR of the SDF over a QoS flow of the non-default QoS rule, the PMFP PLR count request message is transported over the QoS flow of the non-default QoS rule. Otherwise, the PMFP PLR count request message is transported over the QoS flow of the default QoS rule.

NOTE: In the UE-initiated PLR measurement procedure, all the PMFP messages are transported over the same QoS flow on the same access.

2. Upon sending the PMFP PLR count request message, the UE starts counting the transmitted UL packets over the QoS flow.

3-4. Upon receiving the PMFP PLR count request message, the UPF starts counting the received UL packets over the QoS flow which the PMFP PLR count request message is received from and sends the PMFP PLR count response message to the UE.

5-6. The UE sends a PMFP PLR report request message to request the UPF to report the number of the counted UL packets and stops counting the transmitted UL packets over the QoS flow. If the UE intends to request the UPF to restart counting the UL packets, the UE can include an indication in the PMFP PLR report request message and restart counting the transmitted UL packets over the QoS flow.

Editor's note: Error handling on UE side is FFS if the UE fails to receive the acknowledgement of restarting counting the UL packets from the UPF.

7-9. Upon receiving the PMFP PLR report request message, the UPF stops counting the UL packets and sends PMFP PLR report response message which includes the number of the UL packets counted since the reception of the last PMFP PLR count request message. If an indication to request restart of counting procedure is received and accepted by the UPF, the UPF restarts counting the received UL packets.

10. The UE calculates the UL packet loss rate based on the local counting result of the number of transmitted UL packets and the reported number of received UL packets included in the PMFP PLR report response message.

#### 5.4.x.2 UE-initiated PLR count procedure

##### 5.4.x.2.1 UE-initiated PLR count procedure initiation

In order to initiate a UE-initiated PLR count procedure over an access of an MA PDU session, the UE shall:

- allocate an EPTI value as specified in clause 5.4.2.2;

- create a PMFP PLR COUNT REQUEST message;

- set the EPTI IE of the PMFP PLR COUNT REQUEST message to the allocated EPTI value;

- send the PMFP PLR COUNT REQUEST message using the QoS flow indicated in the MAI over the access of the MA PDU session;

- start a timer T103 upon sending the PMFP PLR COUNT REQUEST message; and

- start counting the transmitted UL packets over the QoS flow.

An example of the UE-initiated PLR count procedure is shown in figure 5.4.x.2.1-1.



Figure 5.4.x.2.1-1: UE-initiated PLR count procedure

##### 5.4.x.2.2 UE-initiated PLR count procedure completion

Upon receiving the PMFP PLR COUNT REQUEST message, the UPF shall:

- create a PMFP PLR COUNT RESPONSE message;

- set the EPTI IE of the PMFP PLR COUNT RESPONSE message to the EPTI value of the received PMFP PLR COUNT REQUEST message;

- send the PMFP PLR COUNT RESPONSE message over the access of the MA PDU session via which the PMFP PLR COUNT REQUEST message was received; and

- start counting the received UL packets over the QoS flow on the same access which the PMFP PLR COUNT REQUEST message is received.

Upon receiving PMFP PLR COUNT RESPONSE message with the same EPTI as the allocated EPTI value of the sent PMFP PLR COUNT REQUEST message, the UE shall stop the timer T103 and consider the counting as started.

##### 5.4.x.2.3 Abnormal cases in the UE

The following abnormal cases can be identified:

a) Expiration of the timer T103

Upon expiration of the timer T103, the UE shall abort the procedure.

#### 5.4.x.3 UE-initiated PLR report procedure

##### 5.4.x.3.1 UE-initiated PLR report procedure initiation

In order to initiate a UE-initiated PLR report procedure over an access of an MA PDU session, the UE shall

- allocate an EPTI value as specified in clause 5.4.2.2;

- create a PMFP PLR REPORT REQUEST message;

- set the EPTI IE of the PMFP PLR REPORT REQUEST message to the allocated EPTI value; and

- include the Additional request IE with "ACR" bit set if the UE intends to request the UPF to restart counting the UL packets.

Upon sending the PMFP PLR REPORT REQUEST message the UE shall:

- start a timer T104;

- stop couting the UL packets; and

- restart counting the transmitted UL packest if the Additional request IE with "ACR" bit set is included in the PMFP PLR REPORT REQUEST message.

An example of the UE-initiated PLR report procedure is shown in figure 5.4.x.3.1-1.



Figure 5.4.x.3.1-1: UE-initiated PLR report procedure

##### 5.4.x.3.2 UE-initiated PLR report procedure completion

Upon receiving the PMFP PLR REPORT REQUEST message, the UPF shall:

- create a PMFP PLR REPORT RESPONSE message;

- set the EPTI IE of the PMFP PLR REPORT RESPONSE message to the EPTI value of the received PMFP PLR REPORT REQUEST message;

- stop counting the received UL packets and set the Counting result IE to the number of counted received UL packets since the reception of the last PMFP PLR COUNT REQUEST message over the QoS flow; and

- include the Additional request IE with "ACR" bit set if accepting the request from the UE to restart counting the UL packets.

The UPF shall send the PMFP PLR REPORT RESPONSE message over the QoS flow on the same access which the PMFP PLR REPORT REQUEST message was received. Upon sending the PMFP PLR REPORT RESPONSE message, the UPF restarts counting the received UL packets over the QoS flow on the same access which the PMFP PLR REPORT REQUEST message is received if accepting the request from the UE to restart counting the UL packets.

Upon receiving the PMFP PLR REPORT RESPONSE message with the same EPTI as the allocated EPTI value of the sent PMFP PLR REPORT REQUEST message, the UE shall:

- stop the timer T104; and

- calculate the UL PLR over the QoS flow based on the number of the UL packets counted locally and the number indicated in Counting result IE in the received PMFP PLR REPORT RESPONSE message.

##### 5.4.x.3.3 Abnormal cases in the UE

The following abnormal cases can be identified:

a) Expiration of the timer T104

Upon expiration of the timer T104, the UE shall abort the procedure.

\* \* \* 2nd Change \* \* \* \*

### 5.4.y Network-initiated PLR measurement procedure

#### 5.4.y.1 General

The purpose of the network-initiated PLR measurement procedure is to enable the UPF to measure the PLR of DL traffic to the UPF over an access of an MA PDU session.

The network-initiated PLR measurement procedure can be performed over an access of an MA PDU session only when there is user-plane resources on the access of the MA PDU session. The network-initiated PLR measurement procedure can be performed for the QoS flow of the default QoS rule or the QoS flow of the non-default QoS rule.

The network-initiated PLR measurement procedure consists of following two procedures:

a) network-initiated PLR count procedure (see clause 5.4.y.2); and

b) network-initiated PLR report procedure (see clause 5.4.y.3).

The network shall not initiate another PLR measurement procedure over the same QoS flow until current network-initiated PLR measurement procedure is completed.

An example of network-initiated PLR measurement procedure which consists of the two procedures is shown in figure 5.4.y.1-1.



Figure 5.4.y.1-1: Network-initiated PLR measurement procedure

1. The UPF sends a PMFP PLR count request message to the UE. If the network-initiated PLR measurement is to meaure the PLR of the SDF over a QoS flow of the non-default QoS rule, the PMFP PLR count request message is transported over the QoS flow of the non-default QoS rule. Otherwise, the PMFP PLR count request message is transported over the QoS flow of the default QoS rule.

NOTE: In the network-initiated PLR measurement procedure, all the PMFP messages are transported over the same QoS flow on the same access of the MA PDU session.

2. Upon sending the PMFP PLR count request message, the UPF starts counting the transmitted DL packets over the QoS flow.

3-4. Upon receiving the PMFP PLR count request message, the UE starts counting the received DL packets over the QoS flow which the PMFP PLR count request message is received from and sends the PMFP PLR count response message to the UPF.

5-6. The UPF sends a PMFP PLR report request message to request the UE to report the number of the counted DL packets. If the UPF intends to request the UE to restart counting the DL packets, the UPF can include an indication in the PMFP PLR report request message and restart counting the transmitted DL packets over the QoS flow.

Editor's note: Error handling on UPF side is FFS if the UPF fails to receive the acknowledgement of restarting counting the DL packets from the UE.

7-9. Upon receiving the PMFP PLR report request message, the UE stops counting the DL packets and sends PMFP PLR report response message which includes the number of the DL packets counted since the reception of the last PMFP PLR count request message. If an indication to request restart of counting procedure is received and accepted by the UE, the UE restarts counting the received DL packets.

10. The UPF calculates the DL packet loss rate based on the local counting result of the number of transmitted DL packets and the reported number of received DL packets included in the PMFP PLR report response message.

#### 5.4.y.2 Network-initiated PLR count procedure

##### 5.4.y.2.1 Network-initiated PLR count procedure initiation

In order to initiate a network-initiated PLR count procedure over an access of an MA PDU session, the UPF shall:

- allocate an EPTI value as specified in clause 5.4.2.2;

- create a PMFP PLR COUNT REQUEST message;

- set the EPTI IE of the PMFP PLR COUNT REQUEST message to the allocated EPTI value;

- send the PMFP PLR COUNT REQUEST message using the QoS flow indicated in the MAI over the access of the MA PDU session;

- start a timer T203 upon sending the PMFP PLR COUNT REQUEST message; and

- start counting the transmitted DL packets over the QoS flow.

An example of the network-initiated PLR count procedure is shown in figure 5.4.y.2.1-1.



Figure 5.4.y.2.1-1: Network-initiated PLR count procedure

##### 5.4.y.2.2 Network-initiated PLR count procedure completion

Upon receiving the PMFP PLR COUNT REQUEST message, the UE shall:

- create a PMFP PLR COUNT RESPONSE message;

- set the EPTI IE of the PMFP PLR COUNT RESPONSE message to the EPTI value of the received PMFP PLR COUNT REQUEST message;

- send the PMFP PLR COUNT RESPONSE message over the access of the MA PDU session via which the PMFP PLR COUNT REQUEST message was received; and

- start counting the received DL packets over the QoS flow on the same access which the PMFP PLR COUNT REQUEST message is received.

Upon receiving PMFP PLR COUNT RESPONSE message with the same EPTI as the allocated EPTI value of the sent PMFP PLR COUNT REQUEST message, the UPF shall stop the timer T203 and consider the counting as started.

##### 5.4.y.2.3 Abnormal cases in the UPF

The following abnormal cases can be identified:

a) Expiration of the timer T203

Upon expiration of the timer T203, the UPF shall abort the procedure.

#### 5.4.y.3 Network-initiated PLR report procedure

##### 5.4.y.3.1 Network-initiated PLR report procedure initiation

In order to initiate a network-initiated PLR report procedure over an access of an MA PDU session, the UPF shall

- allocate an EPTI value as specified in clause 5.4.2.2;

- create a PMFP PLR REPORT REQUEST message;

- set the EPTI IE of the PMFP PLR REPORT REQUEST message to the allocated EPTI value; and

- include the Additional request IE with "ACR" bit set if the UPF intends to request the UE to restart counting the DL packets.

Upon sending the PMFP PLR REPORT REQUEST message the UPF shall:

- start a timer T204;

- stop couting the DL packets; and

- restart counting the transmitted DL packest if the Additional request IE with "ACR" bit set is included in the PMFP PLR REPORT REQUEST message.

An example of the network-initiated PLR report procedure is shown in figure 5.4.y.3.1-1.



Figure 5.4.y.3.1-1: Network-initiated PLR report procedure

##### 5.4.y.3.2 Network-initiated PLR report procedure completion

Upon receiving the PMFP PLR REPORT REQUEST message, the UE shall:

- create a PMFP PLR REPORT RESPONSE message;

- set the EPTI IE of the PMFP PLR REPORT RESPONSE message to the EPTI value of the received PMFP PLR REPORT REQUEST message;

- stop counting the received DL packets and set the Counting result IE to the number of counted received DL packets since the reception of the last PMFP PLR COUNT REQUEST message over the QoS flow; and

- include the Additional request IE with "ACR" bit set if accepting the request from the UPF to restart counting the DL packets.

The UE shall send the PMFP PLR REPORT RESPONSE message over the QoS flow on the same access which the PMFP PLR REPORT REQUEST message was received. Upon sending the PMFP PLR REPORT RESPONSE message, the UE restarts counting the received DL packets over the QoS flow on the same access which the PMFP PLR REPORT REQUEST message is received if accepting the request from the UPF to restart counting the DL packets.

Upon receiving the PMFP PLR REPORT RESPONSE message with the same EPTI as the allocated EPTI value of the sent PMFP PLR REPORT REQUEST message, the UPF shall:

- stop the timer T204; and

- calculate the DL PLR over the QoS flow based on the number of the DL packets counted locally and the number indicated in Counting result IE in the received PMFP PLR REPORT RESPONSE message.

##### 5.4.y.3.3 Abnormal cases in the UPF

The following abnormal cases can be identified:

a) Expiration of the timer T204

Upon expiration of the timer T204, the UE shall abort the procedure.

\* \* \* 3rd Change \* \* \* \*

#### 6.2.1.1 General

The following PMFP messages are specified:

- PMFP echo request;

- PMFP echo response;

- PMFP access report;

- PMFP acknowledgement;

- PMFP PLR count request;

- PMFP PLR count response;

- PMFP PLR report request; and

- PMFP PLR report response.

\* \* \* 4th Change \* \* \* \*

#### 6.2.2.1 Message type

Message type is a type 3 information element with length of 1 octet.

Table 6.2.2.1-1 defines the value part of the message type IE used in the PMFP.

Table 6.2.2.1-1: Message type

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bits | | | | | | | | | | |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | | PMFP ECHO REQUEST message |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | | PMFP ECHO RESPONSE message |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | | PMFP ACCESS REPORT message |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  | | PMFP ACKNOWLEDGEMENT message |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |  | | PMFP PLR COUNT REQUEST message |
| 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |  | | PMFP PLR COUNT RESPONSE message |
| 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |  | | PMFP PLR REPORT REQUEST message |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |  | | PMFP PLR REPORT RESPONSE message |
|  | | | | | | | | | | |
| All other values are reserved | | | | | | | | | | |

\* \* \* 5th Change \* \* \* \*

#### 6.2.1.a PMFP PLR count request

##### 6.2.1.a.1 Message definition

The PMFP PLR COUNT REQUEST message is sent by the UE or the UPF to initiate a PMFP PLR measurement procedure.

See table 6.2.1.a.1-1.

Message type: PMFP PLR COUNT REQUEST

Significance: dual

Direction: both

Table 6.2.1.a.1-1: PMFP PLR COUNT REQUEST message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | PMFP PLR count request message identity | Message type  6.2.2.1 | M | V | 1 |
|  | EPTI | Extended procedure transaction identity  6.2.2.2 | M | V | 2 |

#### 6.2.1.b PMFP PLR count response

##### 6.2.1.b.1 Message definition

The PMFP PLR COUNT RESPONSE message is sent by the UE or the UPF to the UE to acknowledge reception of a PMFP PLR COUNT REQUEST message.

See table 6.2.1.b.1-1.

Message type: PMFP PLR COUNT RESPONSE

Significance: dual

Direction: both

Table 6.2.1.b.1-1: PMFP PLR COUNT RESPONSE message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | PMFP PLR count response message identity | Message type  6.2.2.1 | M | V | 1 |
|  | EPTI | Extended procedure transaction identity  6.2.2.2 | M | V | 2 |

#### 6.2.1.c PMFP PLR report request

##### 6.2.1.c.1 Message definition

The PMFP PLR REPORT REQUEST message is sent by either UE or UPF to request the reprot of the counting result.

See table 6.2.1.c.1-1.

Message type: PMFP PLR REPORT REQUEST

Significance: dual

Direction: both

Table 6.2.1.4.1-1: PMFP PLR REPORT REQUEST message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | PMFP PLR report request message identity | Message type  6.2.2.1 | M | V | 1 |
|  | EPTI | Extended procedure transaction identity  6.2.2.2 | M | V | 2 |
|  | Additional request | Additional request  6.2.2.x | O | TV | 1 |

#### 6.2.1.d PMFP PLR report response

##### 6.2.1.d.1 Message definition

The PMFP PLR REPORT RESPONSE message is sent by either UE or the UPF to respond the PMFP PLR REPORT REQUEST message and report the counting result.

See table 6.2.1.d.1-1.

Message type: PMFP PLR REPORT RESPONSE

Significance: dual

Direction: both

Table 6.2.1.d.1-1: PMFP PLR REPORT RESPONSE message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | PMFP PLR report response message identity | Message type  6.2.2.1 | M | V | 1 |
|  | EPTI | Extended procedure transaction identity  6.2.2.2 | M | V | 2 |
|  | Counting result | Counting result  6.2.2.y | M | V | 4 |
|  | Additional request | Additional request  6.2.2.x | O | TV | 1 |

\* \* \* 5th Change \* \* \* \*

#### 6.2.2.x Additional request

The purpose of the additional request information element is to indicate whether to restart counting for another PLR measurement.

The additional request is a type 1 information element.

The additional request information element is coded as shown in figure 6.2.2.x-1 and table 6.2.2.x-1.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | | 4 | 3 | | 2 | | | 1 |  |
| Additional request IEI | | | | 0  spare | | | 0  spare | | 0  spare | ACR | | octet 1 |

Figure 6.2.2.x-1: Additional request information element

Table 6.2.2.x-1: Additional request information element

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Additional request (ACR) (octet 1, bit 1) | | | | |
| Bit | | | | |
| 1 |  |  |  |  |
| 0 |  |  |  | Restart counting is not required |
| 1 |  |  |  | Restart counting is required |
|  | | | | |

#### 6.2.2.y Counting result

The purpose of the counting result information element is to indicate the number of the counted packets.

The counting result is a type 3 information element with length of 5 octet.

The counting result information element is coded as shown in figure 6.2.2.y-1.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Counting result IEI | | | | | | | | octet 1 |
| Counting result | | | | | | | | octet 2  octet 5 |

Figure 6.2.2.y-1: Counting result information element

Table 6.2.2.y-1: Counting result information element

|  |
| --- |
| Counting result (octet 1 to octet 5)  Binary encoded counting result value. |

\* \* \* 6th Changes \* \* \* \*

## 7.2 Timers of performance measurement function (PMF) protocol (PMFP)

Timers of PMFP are shown in table 7.2-1 and table 7.2-2.

Table 7.2-1: Timers of PMFP – UE side

| TIMER NUM. | TIMER VALUE | CAUSE OF START | NORMAL STOP | ON  THE  1st, 2nd, 3rd, 4th EXPIRY (NOTE 1) |
| --- | --- | --- | --- | --- |
| T101 | 1s | Transmission of the first PMFP ECHO REQUEST message | A PMFP ECHO RESPONSE message received for each sent PMFP ECHO REQUEST message | Abort of the procedure. |
| T102 | NOTE 2 | Transmission of PMFP ACCESS REPORT message | PMFP ACKNOWLEDGEMENT message with the same EPTI is received | Retransmission of PMFP ACCESS REPORT message |
| T103 | 1s | Transmission of PMFP PLR COUNT REQUEST message | PMFP PLR COUNT RESPONSE message with the same EPTI is received | Abort of the procedure. |
| T104 | 1s | Transmission of PMFP PLR REPORT REQUEST message | PMFP PLR REPORT RESPONSE message with the same EPTI is received | Abort of the procedure. |
| NOTE 1: Typically, the procedures are aborted on the fifth expiry of the relevant timer. Exceptions are described in the corresponding procedure description.  NOTE 2: Initial timer value is 500 milliseconds. The timer value doubles after each timer expiry, until set to 4 seconds. | | | | |

Table 7.2-2: Timers of PMFP – UPF side

| TIMER NUM. | TIMER VALUE | CAUSE OF START | NORMAL STOP | ON  THE  1st, 2nd, 3rd, 4th EXPIRY (NOTE 1) |
| --- | --- | --- | --- | --- |
| T201 | NOTE 2 | Transmission of the first PMFP ECHO REQUEST message | A PMFP ECHO RESPONSE message received for each sent PMFP ECHO REQUEST message | Abort of the procedure. |
| T203 | 1s | Transmission of PMFP PLR COUNT REQUEST message | PMFP PLR COUNT RESPONSE message with the same EPTI is received | Abort of the procedure. |
| T204 | 1s | Transmission of PMFP PLR REPORT REQUEST message | PMFP PLR REPORT RESPONSE message with the same EPTI is received | Abort of the procedure. |
| NOTE 1: Typically, the procedures are aborted on the fifth expiry of the relevant timer. Exceptions are described in the corresponding procedure description.  NOTE 2: The value of this timer is network dependent. | | | | |

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