**3GPP TSG-RAN2 Meeting #121-bis-e *draftR2-2304320***

**Electronic, April 17-26, 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.331** | **CR** | xxxx | **rev** | **-** | **Current version:** | **17.4.0** |  |
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| *For* [***HELP***](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:***  | Downlink positioning support and posSIB request for L2 UE-to-network remote UE |
|  |  |
| ***Source to WG:*** | MediaTek Inc., CATT, Huawei, HiSilicon, Qualcomm Incorporated, Xiaomi, Intel Corporation, vivo |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | TEI18 |  | ***Date:*** | 2023-04-24 |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***Release:*** | Rel-18 |
|  | *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)Rel-19 (Release 19)* |
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| ***Reason for change:*** | 1. Downlink positioning methods require knowledge of the system time by the target UE. However, a L2 U2N remote UE may be unable to obtain the system time because of lacking a direct Uu link and potentially being out of Uu coverage.
2. A L2 U2N remote UE cannot request posSIBs from the relay UE, which reduces the benefits of posSIBs by forcing remote UEs to use unicast LPP to request assistance data.
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| ***Summary of change:*** | 1. An SFN-DFN offset is added to the RRCReconfigurationSidelink message sent from the L2 U2N relay UE, allowing the remote UE to infer the SFN timeline from the DFN timeline.
2. A requested posSIB list is added to the RemoteUEInformationSidelink message.
3. An indication of support for the SFN-DFN offset by the remote UE is added to the UECapabilityInformationSidelink message.
4. An indication of support for forwarding the posSIB by the remote UE is added to the UECapabilityInformationSidelink message.
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| ***Consequences if not approved:*** | A L2 U2N remote UE may be unable to perform downlink positioning and will be unable to request posSIBs. |
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| ***Clauses affected:*** | 5.8.9.1.1, 5.8.9.1.2, 5.8.9.8.1, 5.8.9.8.2, 5.8.9.8.3, 5.8.9.9.2, 6.6.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS 38.305 CR XXXXTS 37.355 CR XXXXTS 38.306 CR XXXX  |
| ***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 CHANGE*

5.8.9.1.1 General

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**Figure 5.8.9.1.1-1: Sidelink RRC reconfiguration, successful**

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**Figure 5.8.9.1.1-2: Sidelink RRC reconfiguration, failure**

The purpose of this procedure is to modify a PC5-RRC connection, e.g. to establish/modify/release sidelink DRBs or PC5 Relay RLC channels, to (re-)configure NR sidelink measurement and reporting, to (re-)configure sidelink CSI reference signal resources, to (re)configure CSI reporting latency bound, to (re)configure sidelink DRX, to (re-)configure the latency bound of SL Inter-UE coordination report, and to indicate the SFN-DFN offset.

The UE may initiate the sidelink RRC reconfiguration procedure and perform the operation in clause 5.8.9.1.2 on the corresponding PC5-RRC connection in following cases:

- the release of sidelink DRBs associated with the peer UE, as specified in clause 5.8.9.1a.1;

- the establishment of sidelink DRBs associated with the peer UE, as specified in clause 5.8.9.1a.2;

- the modification for the parameters included in *SLRB-Config* of sidelink DRBs associated with the peer UE, as specified in clause 5.8.9.1a.2;

- the release of PC5 Relay RLC channels for L2 U2N Relay UE and Remote UE, as specified in clause 5.8.9.7.1;

- the establishment of PC5 Relay RLC channels for L2 U2N Relay UE and Remote UE, as specified in clause 5.8.9.7.2;

- the modification for the parameters included in *SL-RLC-ChannelConfigPC5* of PC5 Relay RLC channels for L2 U2N Relay UE and Remote UE, as specified in clause 5.8.9.7.2;

- the (re-)configuration of the peer UE to perform NR sidelink measurement and report.

- the (re-)configuration of the sidelink CSI reference signal resources and CSI reporting latency bound;

- the (re-)configuration of the peer UE to perform sidelink DRX;

- the (re-)configuration of the latency bound of SL Inter-UE coordination report;

- the request in a *RemoteUEInformationSidelink* message for the SFN-DFN offset from the L2 U2N Relay UE;

- the change in the value of the SFN-DFN offset at the L2 U2N Relay UE.

NOTE: It is up to L2 U2N Relay UE implementation to determine when the SFN-DFN offset has changed in value to a degree requiring an update to be sent to the L2 U2N Remote UE.

In RRC\_CONNECTED, the UE applies the NR sidelink communications parameters provided in *RRCReconfiguration* (if any). In RRC\_IDLE or RRC\_INACTIVE, the UE applies the NR sidelink communications parameters provided in system information (if any). For other cases, UEs apply the NR sidelink communications parameters provided in *SidelinkPreconfigNR* (if any). When UE performs state transition between above three cases, the UE applies the NR sidelink communications parameters provided in the new state, after acquisition of the new configurations. Before acquisition of the new configurations, UE continues applying the NR sidelink communications parameters provided in the old state.

5.8.9.1.2 Actions related to transmission of *RRCReconfigurationSidelink* message

The UE shall set the contents of *RRCReconfigurationSidelink* message as follows:

1> for each sidelink DRB that is to be released, according to clause 5.8.9.1a.1.1, due to configuration by *sl-ConfigDedicatedNR,* *SIB12*, *SidelinkPreconfigNR* or by upper layers:

2> set the entryincluded in the *slrb-ConfigToReleaseList* corresponding to the sidelink DRB;

1> for each sidelink DRB that is to be established or modified, according to clause 5.8.9.1a.2.1, due to receiving *sl-ConfigDedicatedNR,* *SIB12* or *SidelinkPreconfigNR*:

2> if a sidelink DRB is to be established:

3> assign a new logical channel identity for the logical channel to be associated with the sidelink DRB and set *sl-MAC-LogicalChannelConfigPC5* in the *SLRB-Config* to include the new logical channel identity;

2> set the *SLRB-Config* included in the *slrb-ConfigToAddModList*, according to the received *sl-RadioBearerConfig* and *sl-RLC-BearerConfig* corresponding to the sidelink DRB;

1> set the *sl-MeasConfig* as follows:

2> If the frequency used for NR sidelink communication is included in *sl-FreqInfoToAddModList* in *sl-ConfigDedicatedNR* within *RRCReconfiguration* message or included in *sl-ConfigCommonNR* within SIB12:

3> if UE is in RRC\_CONNECTED:

4> set the *sl-MeasConfig* according to stored NR sidelink measurement configuration information for this destination;

3> if UE is in RRC\_IDLE or RRC\_INACTIVE:

4> set the *sl-MeasConfig* according to stored NR sidelink measurement configuration received from *SIB12*;

2> else:

3> set the *sl-MeasConfig* according to the *sl-MeasPreconfig* in *SidelinkPreconfigNR*;

1> set the *sl-LatencyBoundIUC-Report;*

1> start timer T400 for the destination;

1> set the *sl-CSI-RS-Config*;

1> set the *sl-LatencyBoundCSI-Report*;

1> set the *sl-ResetConfig*;

NOTE 1: Whether/how to set the parameters included in *sl-LatencyBoundIUC-Report*, *sl-CSI-RS-Config*, *sl-LatencyBoundCSI-Report* and *sl-ResetConfig* is up to UE implementation.

1> set the *sl-DRX-ConfigUC-PC5* as follows:

2> If the frequency used for NR sidelink communication is included in *sl-FreqInfoToAddModList* in *sl-ConfigDedicatedNR* within *RRCReconfiguration* message or included in *sl-ConfigCommonNR* within *SIB12*:

3> if UE is in RRC\_CONNECTED and if *sl-ScheduledConfig* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

4> set the *sl-DRX-ConfigUC-PC5* according to stored NR sidelink DRX configuration information for this destination.

NOTE 2: If UE is in RRC\_IDLE or in RRC\_INACTIVE or out of coverage, or in RRC\_CONNECTED and *sl-UE-SelectedConfig* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*, it is up to UE implementation to set the *sl-DRX-ConfigUC-PC5*.

1> for each PC5 Relay RLC channel that is to be released due to configuration by *sl-ConfigDedicatedNR*:

2> set the *SL-RLC-ChannelID* corresponding to the PC5 Relay RLC channel in the *sl-RLC-ChannelToReleaseListPC5*;

1> for each PC5 Relay RLC channel that is to be established or modified due to receiving *sl-ConfigDedicatedNR*:

2> if a PC5 Relay RLC channel is to be established:

3> assign a new logical channel identity for the logical channel to be associated with the PC5 Relay RLC channel and set *sl-MAC-LogicalChannelConfigPC5* in the *SL-RLC-ChannelConfigPC5* to include the new logical channel identity;

2> set the *SL-RLC-ChannelConfigPC5* included in the *sl-RLC-ChannelToAddModListPC5* according to the received *SL-RLC-ChannelConfig* corresponding to the PC5 Relay RLC channel, including setting *sl-RLC-ChannelID-PC5* to the same value of *sl-RLC-ChannelID* received in *SL-RLC-ChannelConfig*;

1> if the UE is operating as a L2 U2N Relay UE:

2> if the destination UE requested the SFN-DFN offset in a previous *RemoteUEInformationSidelink* message:

3> if the SFN-DFN offset has changed since a previous transmission of the *RRCReconfigurationSidelink* message, or no previous transmission of the *RRCReconfigurationSidelink* message has occurred since the reception of the *RemoteUEInformationSidelink* message, and the relay UE set *sfn-DFN-OffsetSupported* to true:

4> set the *sl-SFN-DFN-Offset* according to the relation between the SFN timeline of the PCell and the DFN timeline;

The UE shall submit the *RRCReconfigurationSidelink* message to lower layers for transmission.

[…]

*NEXT CHANGE*

5.8.9.8.1 General

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**Figure 5.8.9.8.1-1: Remote UE information**

This procedure is used by the L2 U2N Remote UE in RRC\_IDLE/RRC\_INACTIVE to inform about the required SIB(s)/posSIB(s), provide Paging related information to the connected L2 U2N Relay UE, and request the SFN-DFN offset from the connected L2 U2N Relay UE.

NOTE: MIB is not required by a L2 U2N Remote UE.

5.8.9.8.2 Actions related to transmission of *RemoteUEInformationSidelink* message

When entering RRC\_IDLE or RRC\_INACTIVE, or upon change in any of the information in the *RemoteUEInformationSidelink* while in RRC\_IDLE or RRC\_INACTIVE, the L2 U2N Remote UE shall:

1> if the UE has not stored a valid version of a SIB, in accordance with clause 5.2.2.2.1, of one or several required SIB(s) in accordance with clause 5.2.2.1 and the requested SIB has not been indicated in *RemoteUEInformationSidelink* message to the L2 U2N Relay UE before:

2> include *sl-RequestedSIB-List* in the *RemoteUEInformationSidelink* to indicate the requested SIB(s);

1> if the UE has not stored a valid version, in accordance with clause 5.2.2.2.1, of one or several posSIB(s) that the UE requires for a positioning operation, and the requested posSIB has not been indicated in *RemoteUEInformationSidelink* message to the L2 U2N Relay UE before, and the connected L2 U2N relay UE set*posSIB-ForwardingSupported* to true:

2> include *sl-RequestedPosSIB-List* in the *RemoteUEInformationSidelink* to indicate the requested posSIB(s);

1> if the UE has not sent *sl-PagingInfo-RemoteUE* in the *RemoteUEInformationSidelink* message to the L2 U2N Relay UE before,set *sl-PagingInfo-RemoteUE* as follows:

2> if the L2 U2N Remote UE is in RRC\_IDLE:

3> include *ng-5G-S-TMSI* in the *sl-PagingIdentityRemoteUE*;

3> if the UE specific DRX cycle is configured by upper layer, set *sl-PagingCycleRemoteUE* to the value of UE specific Uu DRX cycle configured by upper layer*;*

2> else if the L2 U2N Remote UE is in RRC\_INACTIVE:

3> include *ng-5G-S-TMSI* and *fullI-RNTI* in the *sl-PagingIdentityRemoteUE*;

3> if the UE specific DRX cycle is configured by upper layer,

4> set *sl-PagingCycleRemoteUE* to the minimum value of UE specific Uu DRX cycles (configured by upper layer and configured by RRC)*;*

3> else:

4> set *sl-PagingCycleRemoteUE* to the value of UE specific DRX cycle configured by RRC;

1> submit the *RemoteUEInformationSidelink* message to lower layers for transmission;

When entering RRC\_CONNECTED, if L2 U2N remote UE had sent *sl-RequestedSIB-List*, *sl-RequestedPosSIB-List*, and/or *sl-PagingInfo-RemoteUE,* the L2 U2N Remote UE shall:

1> set the *sl-RequestedSIB-List* to the value *release* if requested before;

1> set the *sl-RequestedPosSIB-List* to the value *release* if requested before;

1> set the *sl-PagingInfo-RemoteUE* to the value *release* if sent before;

1> submit the *RemoteUEInformationSidelink* message to lower layers for transmission;

5.8.9.8.3 Reception of *RemoteUEInformationSidelink* message by the L2 U2N Relay UE

The L2 U2N Relay UE shall:

1> if the *RemoteUEInformationSidelink* includes the *sl-PagingInfo-RemoteUE*:

2> if the UE is in RRC\_CONNECTED on an active BWP with common search space configured including *pagingSearchSpace*; or

2> if the UE is in RRC\_IDLE or RRC\_INACTIVE:

3> if the *sl-PagingInfo-RemoteUE* is set to *setup*:

4> monitor the *Paging* message at the L2 U2N Remote UE's paging occasion calculated according to *sl-PagingIdentityRemoteUE* and *sl-PagingCycleRemoteUE* included in *sl-PagingInfo-RemoteUE*;

3> else (the *sl-PagingInfo-RemoteUE* is set to *release*):

4> stop monitoring the *Paging* message at the L2 U2N Remote UE's paging occasion;

4> release the received paging information in *sl-PagingInfo-RemoteUE*;

2> else (the UE is in RRC\_CONNECTED on an active BWP without *pagingSearchSpace* configured):

3> if the *sl-PagingInfo-RemoteUE* is set to *setup*:

4> include the received *sl-PagingIdentityRemoteUE* in *SidelinkUEInformationNR* message and perform Sidelink UE information transmission in accordance with 5.8.3;

3> else (the *sl-PagingInfo-RemoteUE* is set to *release*):

4> initiate transmission of the *SidelinkUEInformationNR* message to release the *sl-PagingIdentityRemoteUE* in *SidelinkUEInformationNR* message in accordance with 5.8.3;

4> release the received paging information in *sl-PagingInfo-RemoteUE*;

1> if the *RemoteUEInformationSidelink* includes the *sl-RequestedSIB-List*:

2> if the *sl-RequestedSIB-List* is set to *setup*:

3> if the L2 U2N Relay UE has not stored a valid version of SIB(s) indicated in *sl-RequestedSIB-List*:

4> perform acquisition of the system information indicated in *sl-RequestedSIB-List* in accordance with 5.2.2;

3> perform the Uu message transfer procedure in accordance with 5.8.9.9;

2> if the *sl-RequestedSIB-List* is set to *release*:

3> release received SIB request in *sl-RequestedSIB-List*;

1> if the *RemoteUEInformationSidelink* includes the *sl-RequestedPosSIB-List*:

2> if the *sl-RequestedPosSIB-List* is set to *setup*:

3> if the L2 U2N Relay UE has not stored a valid version of posSIB(s) indicated in *sl-RequestedPosSIB-List*:

4> perform acquisition of the positioning system information indicated in *sl-RequestedPosSIB-List* in accordance with 5.2.2;

3> else:

4> perform the Uu message transfer procedure in accordance with 5.8.9.9;

2> if the *sl-RequestedPosSIB-List* is set to *release*:

3> release received posSIB request in *sl-RequestedPosSIB-List*.

[…]

*NEXT CHANGE*

5.8.9.9.2 Actions related to transmission of *UuMessageTransferSidelink* message

The L2 U2N Relay UE initiates the Uu message transfer procedure when at least one of the following conditions is met:

1> upon receiving *Paging* message related to the connected L2 U2N Remote UE from network (including *Paging* message within *RRCReconfiguration* message);

1> upon acquisition of the SIB(s) requested by the connected L2 U2N Remote UE (as indicated in *sl-RequestedSIB-List* in the *RemoteUEInformationSidelink*) or upon receiving the updated SIB(s) from network which has been requested by the connected L2 U2N Remote UE;

1> upon acquisition of the posSIB(s) requested by the connected L2 U2N Remote UE (as indicated in *sl-RequestedPosSIB-List* in the *RemoteUEInformationSidelink*) or upon receiving the updated posSIB(s) from network which has been requested by the connected L2 U2N Remote UE;

1> upon unsolicited SIB1 forwarding to the connected L2 U2N Remote UE or upon receiving the updated *SIB1* from network;

For each associated L2 U2N Remote UE, the L2 U2N Relay UE shall set the contents of *UuMessageTransferSidelink* message as follows:

1> include *sl-PagingDelivery* if the *Paging* message received from network containing the *ue-Identity* of the L2 U2N Remote UE;

1> include *sl-SIB1-Delivery* if any of the conditions for initiating Uu message transfer procedure related to SIB1 are met;

1> include *sl-SystemInformationDelivery* if any of the conditions for initiating Uu message transfer procedure related to System Information are met;

1> submit the *UuMessageTransferSidelink* message to lower layers for transmission.

NOTE: The L2 U2N Relay UE may perform unsolicited forwarding of SIB1 to the L2 U2N Remote UE based on UE implementation.

[…]

*NEXT CHANGE*

6.6.2 Message definitions

[…]

– *RemoteUEInformationSidelink*

The *RemoteUEInformationSidelink* message is used to request SIB(s) or provide paging related information as specified in clause 5.8.9.8.1.

Signalling radio bearer: SL-SRB3

RLC-SAP: AM

Logical channel: SCCH

Direction: L2 U2N Remote UE to L2 U2N Relay UE

***RemoteUEInformationSidelink* message**

-- ASN1START

-- TAG-REMOTEUEINFORMATIONSIDELINK-START

RemoteUEInformationSidelink-r17 ::= SEQUENCE {

 criticalExtensions CHOICE {

 remoteUEInformationSidelink-r17 RemoteUEInformationSidelink-r17-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

RemoteUEInformationSidelink-r17-IEs ::= SEQUENCE {

 sl-RequestedSIB-List-r17 SetupRelease { SL-RequestedSIB-List-r17} OPTIONAL, -- Need M

 sl-PagingInfo-RemoteUE-r17 SetupRelease { SL-PagingInfo-RemoteUE-r17} OPTIONAL, -- Need M

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension RemoteUEInformationSidelink-v18xy-IEs OPTIONAL

}

RemoteUEInformationSidelink-v18xy-IEs ::= SEQUENCE {

 sl-RequestedPosSIB-List-r18 SetupRelease { SL-RequestedPosSIB-List-r18 } OPTIONAL, -- Need M

 sl-SFN-DFN-OffsetRequested ENUMERATED { true } OPTIONAL, -- Need R

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

SL-RequestedSIB-List-r17 ::= SEQUENCE (SIZE (maxSIB-MessagePlus1-r17)) OF SL-SIB-ReqInfo-r17

SL-PagingInfo-RemoteUE-r17 ::= SEQUENCE {

 sl-PagingIdentityRemoteUE-r17 SL-PagingIdentityRemoteUE-r17,

 sl-PagingCycleRemoteUE-r17 PagingCycle OPTIONAL -- Need M

}

SL-SIB-ReqInfo-r17 ::= ENUMERATED { sib1, sib2, sib3, sib4, sib5, sib6, sib7, sib8, sib9, sib10, sib11, sib12, sib13,

 sib14, sib15, sib16, sib17, sib18, sib19, sib20, sib21, spare11, spare10, spare9,

 spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1, ... }

SL-RequestedPosSIB-List-r18 ::= SEQUENCE (SIZE (1..maxSIB)) OF SL-PosSIB-ReqInfo-r18

SL-PosSIB-ReqInfo-r18 ::= ENUMERATED { posSibType1-1, posSibType1-2, posSibType1-3, posSibType1-4, posSibType1-5, posSibType1-6,

 posSibType1-7, posSibType1-8, posSibType2-1, posSibType2-2, posSibType2-3, posSibType2-4,

 posSibType2-5, posSibType2-6, posSibType2-7, posSibType2-8, posSibType2-9, posSibType2-10,

 posSibType2-11, posSibType2-12, posSibType2-13, posSibType2-14, posSibType2-15,

 posSibType2-16, posSibType2-17, posSibType2-18, posSibType2-19, posSibType2-20,

 posSibType2-21, posSibType2-22, posSibType2-23, posSibType3-1, posSibType4-1,

 posSibType5-1,posSibType6-1, posSibType6-2, posSibType6-3,... }

-- TAG-REMOTEUEINFORMATIONSIDELINK-STOP

-- ASN1STOP

|  |
| --- |
| ***RemoteUEInformationSidelink-IEs* field descriptions** |
| ***sl-RequestedSIB-List***Contains a list of requested SIBs. |
| ***sl-PagingInfo-RemoteUE***Indicates the paging information used by L2 U2N Relay UE to perform the connected L2 U2N Remote UE's paging monitoring. |
| ***sl-PagingIdentityRemoteUE***Indicates the L2 U2N Remote UE's paging UE ID. |
| ***sl-PagingCycleRemoteUE***Indicates the L2 U2N Remote UE's UE specific DRX cycle as the minimum value of the one provided by upper layers (if configured) and the one provided by RRC layer (if configured). Value rf32 corresponds to 32 radio frames, value rf64 corresponds to 64 radio frames and so on. |
| ***sl-SFN-DFN-OffsetRequested***If present, this field indicates that the L2 U2N Remote UE requests the L2 U2N Relay UE to provide the SFN-DFN offset in a subsequent *RRCReconfigurationSidelink* message. |

– *RRCReconfigurationSidelink*

The *RRCReconfigurationSidelink* message is the command to AS configuration of the PC5 RRC connection. It is only applied to unicast of NR sidelink communication.

Signalling radio bearer: SL-SRB3

RLC-SAP: AM

Logical channel: SCCH

Direction: UE to UE

***RRCReconfigurationSidelink* message**

-- ASN1START

-- TAG-RRCRECONFIGURATIONSIDELINK-START

RRCReconfigurationSidelink ::= SEQUENCE {

 rrc-TransactionIdentifier-r16 RRC-TransactionIdentifier,

 criticalExtensions CHOICE {

 rrcReconfigurationSidelink-r16 RRCReconfigurationSidelink-r16-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

RRCReconfigurationSidelink-r16-IEs ::= SEQUENCE {

 slrb-ConfigToAddModList-r16 SEQUENCE (SIZE (1..maxNrofSLRB-r16)) OF SLRB-Config-r16 OPTIONAL, -- Need N

 slrb-ConfigToReleaseList-r16 SEQUENCE (SIZE (1..maxNrofSLRB-r16)) OF SLRB-PC5-ConfigIndex-r16 OPTIONAL, -- Need N

 sl-MeasConfig-r16 SetupRelease {SL-MeasConfig-r16} OPTIONAL, -- Need M

 sl-CSI-RS-Config-r16 SetupRelease {SL-CSI-RS-Config-r16} OPTIONAL, -- Need M

 sl-ResetConfig-r16 ENUMERATED {true} OPTIONAL, -- Need N

 sl-LatencyBoundCSI-Report-r16 INTEGER (3..160) OPTIONAL, -- Need M

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension RRCReconfigurationSidelink-v1700-IEs OPTIONAL

}

RRCReconfigurationSidelink-v1700-IEs ::= SEQUENCE {

 sl-DRX-ConfigUC-PC5-r17 SetupRelease { SL-DRX-ConfigUC-r17 } OPTIONAL, -- Need M

 sl-LatencyBoundIUC-Report-r17 SetupRelease { SL-LatencyBoundIUC-Report-r17 } OPTIONAL, -- Need M

 sl-RLC-ChannelToReleaseListPC5-r17 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-ChannelID-r17 OPTIONAL, -- Need N

 sl-RLC-ChannelToAddModListPC5-r17 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-ChannelConfigPC5-r17 OPTIONAL, -- Need N

 nonCriticalExtension RRCReconfigurationSidelink-v18xy-IEs OPTIONAL

}

RRCReconfigurationSidelink-v18xy-IEs ::= SEQUENCE {

 sl-SFN-DFN-Offset-r18 SL-SFN-DFN-Offset-r18 OPTIONAL, -- Need N

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

SL-LatencyBoundIUC-Report-r17::= INTEGER (3..160)

SLRB-Config-r16::= SEQUENCE {

 slrb-PC5-ConfigIndex-r16 SLRB-PC5-ConfigIndex-r16,

 sl-SDAP-ConfigPC5-r16 SL-SDAP-ConfigPC5-r16 OPTIONAL, -- Need M

 sl-PDCP-ConfigPC5-r16 SL-PDCP-ConfigPC5-r16 OPTIONAL, -- Need M

 sl-RLC-ConfigPC5-r16 SL-RLC-ConfigPC5-r16 OPTIONAL, -- Need M

 sl-MAC-LogicalChannelConfigPC5-r16 SL-LogicalChannelConfigPC5-r16 OPTIONAL, -- Need M

 ...

}

SLRB-PC5-ConfigIndex-r16 ::= INTEGER (1..maxNrofSLRB-r16)

SL-SDAP-ConfigPC5-r16 ::= SEQUENCE {

 sl-MappedQoS-FlowsToAddList-r16 SEQUENCE (SIZE (1.. maxNrofSL-QFIsPerDest-r16)) OF SL-PQFI-r16 OPTIONAL, -- Need N

 sl-MappedQoS-FlowsToReleaseList-r16 SEQUENCE (SIZE (1.. maxNrofSL-QFIsPerDest-r16)) OF SL-PQFI-r16 OPTIONAL, -- Need N

 sl-SDAP-Header-r16 ENUMERATED {present, absent},

 ...

}

SL-PDCP-ConfigPC5-r16 ::= SEQUENCE {

 sl-PDCP-SN-Size-r16 ENUMERATED {len12bits, len18bits} OPTIONAL, -- Need M

 sl-OutOfOrderDelivery-r16 ENUMERATED { true } OPTIONAL, -- Need R

 ...

}

SL-RLC-ConfigPC5-r16 ::= CHOICE {

 sl-AM-RLC-r16 SEQUENCE {

 sl-SN-FieldLengthAM-r16 SN-FieldLengthAM OPTIONAL, -- Need M

 ...

 },

 sl-UM-Bi-Directional-RLC-r16 SEQUENCE {

 sl-SN-FieldLengthUM-r16 SN-FieldLengthUM OPTIONAL, -- Need M

 ...

 },

 sl-UM-Uni-Directional-RLC-r16 SEQUENCE {

 sl-SN-FieldLengthUM-r16 SN-FieldLengthUM OPTIONAL, -- Need M

 ...

 }

}

SL-LogicalChannelConfigPC5-r16 ::= SEQUENCE {

 sl-LogicalChannelIdentity-r16 LogicalChannelIdentity,

 ...

}

SL-PQFI-r16 ::= INTEGER (1..64)

SL-CSI-RS-Config-r16 ::= SEQUENCE {

 sl-CSI-RS-FreqAllocation-r16 CHOICE {

 sl-OneAntennaPort-r16 BIT STRING (SIZE (12)),

 sl-TwoAntennaPort-r16 BIT STRING (SIZE (6))

 } OPTIONAL, -- Need M

 sl-CSI-RS-FirstSymbol-r16 INTEGER (3..12) OPTIONAL, -- Need M

 ...

}

SL-RLC-ChannelConfigPC5-r17::= SEQUENCE {

 sl-RLC-ChannelID-PC5-r17 SL-RLC-ChannelID-r17,

 sl-RLC-ConfigPC5-r17 SL-RLC-ConfigPC5-r16 OPTIONAL, -- Need M

 sl-MAC-LogicalChannelConfigPC5-r17 SL-LogicalChannelConfigPC5-r16 OPTIONAL, -- Need M

 ...

}

SL-SFN-DFN-Offset-r18 ::= SEQUENCE {

 sl-FrameOffset-r18 INTEGER (1..1023) OPTIONAL, -- Need S

 sl-SubframeOffset-r18 INTEGER (1..9) OPTIONAL, -- Need S

 sl-SlotOffset-r18 INTEGER (1..31) OPTIONAL -- Need S

}

-- TAG-RRCRECONFIGURATIONSIDELINK-STOP

-- ASN1STOP

[…]

– *UECapabilityInformationSidelink*

The *UECapabilityInformationSidelink* message is used to transfer UE radio access capabilities. It is only applied to unicast of NR sidelink communication.

Signalling radio bearer: SL-SRB3

RLC-SAP: AM

Logical channel: SCCH

Direction: UE to UE

***UECapabilityInformationSidelink* message**

-- ASN1START

-- TAG-UECAPABILITYINFORMATIONSIDELINK-START

UECapabilityInformationSidelink ::= SEQUENCE {

 rrc-TransactionIdentifier-r16 RRC-TransactionIdentifier,

 criticalExtensions CHOICE {

 ueCapabilityInformationSidelink-r16 UECapabilityInformationSidelink-r16-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

UECapabilityInformationSidelink-r16-IEs ::= SEQUENCE {

 accessStratumReleaseSidelink-r16 AccessStratumReleaseSidelink-r16,

 pdcp-ParametersSidelink-r16 PDCP-ParametersSidelink-r16 OPTIONAL,

 rlc-ParametersSidelink-r16 RLC-ParametersSidelink-r16 OPTIONAL,

 supportedBandCombinationListSidelinkNR-r16 BandCombinationListSidelinkNR-r16 OPTIONAL,

 supportedBandListSidelink-r16 SEQUENCE (SIZE (1..maxBands)) OF BandSidelinkPC5-r16 OPTIONAL,

 appliedFreqBandListFilter-r16 FreqBandList OPTIONAL,

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension UECapabilityInformationSidelink-v1700-IEs OPTIONAL

}

UECapabilityInformationSidelink-v1700-IEs ::= SEQUENCE {

 mac-ParametersSidelink-r17 MAC-ParametersSidelink-r17 OPTIONAL,

 supportedBandCombinationListSidelinkNR-v1710 BandCombinationListSidelinkNR-v1710 OPTIONAL,

 nonCriticalExtension UECapabilityInformationSidelink-v18xy-IEs OPTIONAL

}

UECapabilityInformationSidelink-v18xy-IEs ::= SEQUENCE {

 sfn-DFN-OffsetSupported-r18 ENUMERATED { true } OPTIONAL,

 posSIB-ForwardingSupported-r18 ENUMERATED { true } OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

MAC-ParametersSidelink-r17 ::= SEQUENCE {

 drx-OnSidelink-r17 ENUMERATED {supported} OPTIONAL,

 ...

}

AccessStratumReleaseSidelink-r16 ::= ENUMERATED { rel16, rel17, spare6, spare5, spare4, spare3, spare2, spare1, ... }

PDCP-ParametersSidelink-r16 ::= SEQUENCE {

 outOfOrderDeliverySidelink-r16 ENUMERATED {supported} OPTIONAL,

 ...

}

BandCombinationListSidelinkNR-r16 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombinationParametersSidelinkNR-r16

BandCombinationListSidelinkNR-v1710 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombinationParametersSidelinkNR-v1710

BandCombinationParametersSidelinkNR-r16 ::= SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BandParametersSidelink-r16

BandCombinationParametersSidelinkNR-v1710 ::= SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BandParametersSidelink-v1710

BandParametersSidelink-v1710 ::= SEQUENCE {

 --32-5a-1

 tx-IUC-Scheme1-Mode2Sidelink-r17 ENUMERATED {supported} OPTIONAL,

 --32-5b-1

 tx-IUC-Scheme2-Mode2Sidelink-r17 ENUMERATED {n4, n8, n16} OPTIONAL

}

BandSidelinkPC5-r16 ::= SEQUENCE {

 freqBandSidelink-r16 FreqBandIndicatorNR,

 --15-1

 sl-Reception-r16 SEQUENCE {

 harq-RxProcessSidelink-r16 ENUMERATED {n16, n24, n32, n64},

 pscch-RxSidelink-r16 ENUMERATED {value1, value2},

 scs-CP-PatternRxSidelink-r16 CHOICE {

 fr1-r16 SEQUENCE {

 scs-15kHz-r16 BIT STRING (SIZE (16)) OPTIONAL,

 scs-30kHz-r16 BIT STRING (SIZE (16)) OPTIONAL,

 scs-60kHz-r16 BIT STRING (SIZE (16)) OPTIONAL

 },

 fr2-r16 SEQUENCE {

 scs-60kHz-r16 BIT STRING (SIZE (16)) OPTIONAL,

 scs-120kHz-r16 BIT STRING (SIZE (16)) OPTIONAL

 }

 } OPTIONAL,

 extendedCP-RxSidelink-r16 ENUMERATED {supported} OPTIONAL

 } OPTIONAL,

 --15-10

 sl-Tx-256QAM-r16 ENUMERATED {supported} OPTIONAL,

 --15-12

 lowSE-64QAM-MCS-TableSidelink-r16 ENUMERATED {supported} OPTIONAL,

 ...,

 [[

 --15-14

 csi-ReportSidelink-r16 SEQUENCE {

 csi-RS-PortsSidelink-r16 ENUMERATED {p1, p2}

 } OPTIONAL,

 --15-19

 rankTwoReception-r16 ENUMERATED {supported} OPTIONAL,

 --15-23

 sl-openLoopPC-RSRP-ReportSidelink-r16 ENUMERATED {supported} OPTIONAL,

 --13-1

 sl-Rx-256QAM-r16 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 --32-5a-2

 rx-IUC-Scheme1-PreferredMode2Sidelink-r17 ENUMERATED {supported} OPTIONAL,

 --32-5a-3

 rx-IUC-Scheme1-NonPreferredMode2Sidelink-r17 ENUMERATED {supported} OPTIONAL,

 --32-5b-2

 rx-IUC-Scheme2-Mode2Sidelink-r17 ENUMERATED {n5, n15, n25, n32, n35, n45, n50, n64} OPTIONAL,

 --32-6-1

 rx-IUC-Scheme1-SCI-r17 ENUMERATED {supported} OPTIONAL,

 --32-6-2

 rx-IUC-Scheme1-SCI-ExplicitReq-r17 ENUMERATED {supported} OPTIONAL,

 --32-7

 scheme2-ConflictDeterminationRSRP-r17 ENUMERATED {supported} OPTIONAL

 ]]

}

-- TAG-UECAPABILITYINFORMATIONSIDELINK-STOP

-- ASN1STOP

*END OF CHANGE*