**3GPP TSG-RAN WG2 Meeting #126 R2-2405982**

**Fukuoka, Japan, May 20th-24th, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  | **38.355** | **CR** | **0004** | **rev** | **2** | **Current version:** | **18.1.0** |  |
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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 | **x** |

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| ***Title:***  | CR 38.355 for SLPP capability |
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| ***Source to WG:*** | Xiaomi |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_pos\_enh2-Core |  | ***Date:*** |  2024-05-27 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)**Rel-20 (Release 20)* |
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| ***Reason for change:*** | Update of UE capabilities based on updated RAN1 feature list in R1-2403703 and R1-2405564. |
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| ***Summary of change:*** | Capture the following UE capabilities for SLPP according to RAN1 feature list:41-1-1, 41-1-1a, 41-1-20, 41-1-21.Update the following UE capabilities for SLPP according to RAN1 feature list:41-1-2, 41-1-3, 41-1-7e, 41-1-7f. |
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| ***Consequences if not approved:*** | UE capabilities for SLPP will not be correctly captured. |
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| ***Clauses affected:*** | 6.6 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  |  |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  |  |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

START OF CHANGE

## 6.6 SLPP PDU Common SL-PRS Methods Contents

#### *– CommonSL-PRS-MethodsIEsProvideCapabilities*

-- ASN1START

-- TAG-COMMONSL-PRS-METHODSIESPROVIDECAPABILITIES-START

CommonSL-PRS-MethodsIEsProvideCapabilities ::= SEQUENCE {

 --R1 41-1-1a Common SL-PRS processing capability per UE

 sl-PRS-CommonProcCapabilityPerUE SL-PRS-CommonProcCapabilityPerUE OPTIONAL,

 sl-PRS-CapabilityBandList SEQUENCE (SIZE (1..nrMaxBands)) OF SL-PRS-CapabilityPerBand,

 ...

}

SL-PRS-CapabilityPerBand ::= SEQUENCE {

 freqBandIndicatorNR INTEGER (1..1024),

 --R1 41-1-1 Common SL-PRS processing capability in a SL BWP

 sl-PRS-CommonProcCapabilityPerBand SL-PRS-CommonProcCapabilityPerBand OPTIONAL,

 --R1 41-1-19 ARP location provision for sidelink as assistance data

 sl-PositioningARP-LocationProvision ENUMERATED {supported} OPTIONAL,

 --R1 41-1-19a Report of Rx ARP-ID with SL positioning measurements

 sl-PositioningMeasReportWithRxARP-ID ENUMERATED {supported} OPTIONAL,

 --R1 41-1-19b Report of Tx ARP-ID to LMF or another UE for the transmitted SL PRS

 sl-PRS-ReportTxARP-ID ENUMERATED {supported} OPTIONAL,

 --R1 41-1-2 Receiving SL-PRS in a shared resource pool

 sl-PRS-RxInSharedResourcePool ENUMERATED {supported} OPTIONAL,

 --R1 41-1-3 Receiving SL-PRS in a dedicated resource pool

 sl-PRS-RxInDedicatedResourcePool SL-PRS-RxInDedicatedResourcePool OPTIONAL,

 --R1 41-1-4a Transmitting SL-PRS in a shared resource pool

 sl-PRS-TxInSharedResourcePool ENUMERATED {supported} OPTIONAL,

 --R1 41-1-4b Transmitting SL-PRS mode 1 in a dedicated resource pool

 sl-PRS-TxScheme1InDedicatedResourcePool ENUMERATED {supported} OPTIONAL,

 --R1 41-1-4c Transmitting SL-PRS mode 2 in a dedicated resource pool

 sl-PRS-TxScheme2InDedicatedResourcePool ENUMERATED {supported} OPTIONAL,

 --R1 41-1-7e SL PRS measurement for SL PRS-RSRP

 sl-PRS-RSRP-Meas ENUMERATED {supported} OPTIONAL,

 --R1 41-1-7f SL PRS measurement for SL PRS-RSRPP

 sl-PRS-RSRPP-Meas ENUMERATED {supported} OPTIONAL,

 --R1 41-1-11 TDM-based multiplexing of SL-PRS reception from different UEs in the same slot in dedicated resource pool

 sl-PRS-TDM-Multiplexing ENUMERATED {supported} OPTIONAL,

 --R1 41-1-12 Comb-based multiplexing for SL-PRS reception from different UEs in the same slot in dedicated resource pool

 sl-PRS-RxCombMultiplexing ENUMERATED {supported} OPTIONAL,

 --R1 41-1-13 Reporting the additional paths for SL positioning

 sl-PRS-AdditionalPathsReport ENUMERATED {n1,n2,n4,n6,n8} OPTIONAL,

 --R1 41-1-14 LoS/NLoS indicator for SL positioning per measurement

 sl-PRS-LOS-NLOS-Indication ENUMERATED {hard, hard-soft} OPTIONAL,

 -- R1 41-1-20: Supports SL PRS Rx for a band configured with SL CA

 sl-PRS-RxForBandWithSL-CA ENUMERATED {supported} OPTIONAL,

 -- R1 41-1-21: Supports SL PRS Tx for a band configured with SL CA

 sl-PRS-TxForBandWithSL-CA ENUMERATED {supported} OPTIONAL,

 ...

}

SL-PRS-CommonProcCapabilityPerUE ::= SEQUENCE {

 --R1 41-1-1a Common SL-PRS processing capability

 maxNumOfActiveSL-PRS-Resources SEQUENCE {

 fr1 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24} OPTIONAL,

 fr2 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64, n128} OPTIONAL

 },

 maxNumOfSlotswithActiveSL-PRS-Resources SEQUENCE {

 fr1 ENUMERATED {n1, n2, n3, n4, n6, n8} OPTIONAL,

 fr2 ENUMERATED {n1, n2, n4, n8, n12, n16, n24, n32, n48, n64} OPTIONAL

 },

 ...

}

SL-PRS-CommonProcCapabilityPerBand ::= SEQUENCE {

 maxSL-PRS-Bandwidth CHOICE {

 fr1 ENUMERATED {mhz5, mhz10, mhz20, mhz40, mhz50, mhz80, mhz100},

 fr2 ENUMERATED {mhz50, mhz100, mhz200, mhz400}

 },

 maxNumOfActiveSL-PRS-ResourcesInOneSlot CHOICE {

 fr1 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24},

 fr2 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64, n128}

 },

 maxNumOfSlotsWithActiveSL-PRS-Resources CHOICE {

 fr1 ENUMERATED {n1, n2, n3, n4, n6, n8},

 fr2 ENUMERATED {n1, n2, n4, n8, n12, n16, n24, n32, n48, n64}

 },

 minTimeAfterEndofSlotCarryActiveSL-PRS-Resources ENUMERATED {ms20, ms30, ms40, ms50, ms80, ms100, ms160}

}

SL-PRS-RxInDedicatedResourcePool ::= SEQUENCE {

 numOfSupportedRxPSCCH-PerSlot ENUMERATED {value1, value2},

 supportedCP-TypeFor60kHzSCS ENUMERATED {ncp, ncpAndECP}

}

-- TAG-COMMONSL-PRS-METHODSIESPROVIDECAPABILITIES-STOP

-- ASN1STOP

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| *CommonSL-PRS-MethodsIEsProvideCapabilities* field descriptions |
| ***sl-PositioningARP-LocationProvision***Indicates whether UE supports of ARP location provision for sidelink as assistance data. |
| ***sl-PositioningMeasReportWithARP-ID***Indicates whether UE supports providing Rx ARP-ID with SL positioning measurements. |
| ***sl-PRS-AdditionalPathsReport***Indicates whether UE supports RSRPP reporting for additional paths.The value indicates the maximum number of additional detected path timing reporting for K additional paths for SL positioning.UE supporting this feature shall also support at least one of *sl-PRS-RSTD-Meas*, *sl-RTOA-Meas*, *sl-PRS-RxTxTimeDiffWithoutTxTimeStamp*, *sl-PRS-RxTxTimeDiffWithTxTimeStamp*, *sl-PRS-RSRPP-Meas*, or *sl-AoA-Meas*. |
| ***sl-PRS-CommonProcCapabilityPerBand***Indicates the common SL-PRS processing capability per band, and comprises the following sub-fields:- *maxSL-PRS-Bandwidth*: Maximum SL PRS bandwidth in MHz in a resource pool for positioning, which is supported and reported by UE for SL-PRS measurement;- *maxNumOfActiveSL-PRS-ResourcesInOneSlot*: Maximum number of active SL PRS resources across all configured RPs in a slot assuming maximum SL PRS bandwidth in MHz, which is supported and reported by UE;- *maxNumOfSlotsWithActiveSL-PRS-Resources*: Maximum number of slots with active SL PRS resources across all configured RPsassuming maximum SL PRS bandwidth in MHz, which is supported and reported by UE;- *minTimeAfterEndofSlotCarryActiveSL-PRS-Resources*: Minimum time after the end of a slot carrying the active SL-PRS resource(s) assuming maximum number of symbols and maximum bandwidth for a UE to finish the SL-PRS resource and the associated PSCCH processing which is supported and reported by UE;NOTE 1: A SL PRS resource is considered as active starting at the end of the last symbol of the PSCCH carrying the SCI trigger and the occupancy is released at the end of timeline indicated in *minTimeAfterEndofSlotCarryActiveSL-PRS-Resources*. |
| ***sl-PRS-CommonProcCapabilityPerUE***Indicates the common SL-PRS processing capability, and comprises the following sub-fields:- *maxNumOfActiveSL-PRS-Resources*: Maximum number of active SL PRS resources across all configured RPs across all bands in a slot assuming maximum SL PRS bandwidth in MHz, which is supported and reported by UE;- *maxNumOfSlotswithActiveSL-PRS-Resources*: Maximum number of slots with active SL PRS resources across all configured RPsacross all bands assuming maximum SL PRS bandwidth in MHz, which is supported and reported by UE.UE supporting this feature shall also support *sl-PRS-CommonProcCapabilityPerBand*. |
| ***sl-PRS-LOS-NLOS-Indication***Indicates whether UE supports LoS/NLoS indicator for SL positioning per measurement.The value indicates whether the indicator is hard value or hard+soft value.UE supporting this feature shall also support at least one of *sl-PRS-RSTD-Meas*, *sl-RTOA-Meas*, *sl-PRS-RxTxTimeDiffWithoutTxTimeStamp*, *sl-PRS-RxTxTimeDiffWithTxTimeStamp*, or *sl-AoA-Meas*. |
| ***sl-PRS-ReportTxARP-ID***Indicates whether UE supports providing Tx ARP-ID for the transmitted SL PRS. |
| ***sl-PRS-RSRP-Meas***Indicates whether UE supports SL PRS measurement for SL PRS-RSRP, and is comprised of the following functional components:- Support SL PRS-RSRP measurement based on SL-PRS;- Support SL PRS-RSRP measurement reporting.UE supporting this feature shall also support *sl-PRS-CommonProcCapabilityPerBand*. |
| ***sl-PRS-RSRPP-Meas***Indicates whether UE supports SL PRS measurement for SL PRS-RSRPP, and is comprised of the following functional components:- Support SL PRS-RSRPP measurement based on SL-PRS;- Support SL PRS-RSRPP measurement reporting.UE supporting this feature shall also support *sl-PRS-CommonProcCapabilityPerBand*. |
| ***sl-PRS-RxCombMultiplexing***Indicates whether UE supports comb-based multiplexing for SL-PRS reception from different UEs in the same slot in dedicated resource pool.UE supporting this feature shall also support *sl-PRS-RxInDedicatedResourcePool*. |
| ***sl-PRS-RxForBandWithSL-CA***Indicates whether UE supports of SL PRS reception in a single carrier for a shared SL PRS resource pool and/or a dedicated SL PRS resource pool for a band configured with SL CA.UE supports this feature shall also support *sl-CA-Communication-r18*, and one of *sl-PRS-RxInSharedResourcePool-r18* or *sl-PRS-RxInDedicatedResourcePool-r18*.NOTE 1: In a shared SL PRS resource pool in a single SL carrier: Tx power control follows the rule defined for SL CA in NR Rel-18.NOTE 2: In a dedicated SL PRS resource pool in a single SL carrier when the slots (pre)configured for the dedicated SL PRS resource pool do not collide with the slots (pre)configured for any other resource pool or S-SSB resource(s) in other carriers. |
| ***sl-PRS-RxInDedicatedResourcePool***Indicates whether UE supports receiving SL-PRS in dedicated resource pool and receiving SCI format 1B.This field comprises the following sub-fields:- *numOfSupportedRxPSCCH-PerSlot*: Indicates the number of PSCCH UE can receive in a slot. value1 corresponds to floor (NRB /10 RBs), value2 corresponds to 2\*floor (NRB /10 RBs). NRB is the number of RBs defined per channel bandwidth by RAN4 in 38.101-1 [11] Table 5.3.2-1 for FR1 and 38.101-2 [10] Table 5.3.2-1 for FR2.- *supportedCP-TypeFor60kHzSCS*: Supported CP type for 60 kHz SCS.UE supporting this feature shall also support *sl-PRS-CommonProcCapabilityPerBand*. |
| ***sl-PRS-RxInSharedResourcePool***Indicates whether UE supports receiving SL-PRS in shared resource pool and receiving SCI format 2D.UE supporting this feature shall also support *sl-PRS-CommonProcCapabilityPerBand* and *sl-Reception-r16* defined in TS 38.331 [2]. |
| ***sl-PRS-TDM-Multiplexing***Indicates whether UE supports TDM-based multiplexing of SL-PRS reception from different UEs in the same slot in dedicated resource pool.UE supporting this feature shall also support*sl-PRS-RxInDedicatedResourcePool*. |
| ***sl-PRS-TxForBandWithSL-CA***Indicates whether UE supports of SL PRS transmission in a single carrier for a shared SL PRS resource pool and/or a dedicated SL PRS resource pool for a band configured with SL CA.UE supports this feature shall also support *sl-CA-Communication-r18*, and one of *sl-PRS-TxInSharedResourcePool-r18, sl-PRS-TxScheme1InDedicatedResourcePool-r18*, or *sl-PRS-TxScheme2InDedicatedResourcePool-r18*.NOTE 1: In a shared SL PRS resource pool in a single SL carrier: Tx power control follows the rule defined for SL CA in NR Rel-18.NOTE 2: In a dedicated SL PRS resource pool in a single SL carrier when the slots (pre)configured for the dedicated SL PRS resource pool do not collide with the slots (pre)configured for any other resource pool or S-SSB resource(s) in other carriers. |
| ***sl-PRS-TxInSharedResourcePool***Indicates whether UE supports transmitting SL-PRS in a shared resource pool, and is comprised of the following functional components:- Support transmitting SL-PRS in shared resource pool;- Support transmitting SCI format 2D;- Support downlink pathloss based open loop power control.The supported resource allocation modes are the same as for communication and signaled in *sl-TransmissionMode1-r16* and *sl-TransmissionMode2-r16* defined in TS 38.331 [2]*.*UE supporting this feature shall also support *sl-TransmissionMode1-r16* or *sl-TransmissionMode2-r16*, and *sl-PRS-RxInSharedResourcePool* defined in TS 38.331 [2]. |
| ***sl-PRS-TxScheme1InDedicatedResourcePool***Indicates whether UE supports transmitting SL-PRS scheme 1 in a dedicated resource pool, and is comprised of the following functional components:- Support transmitting SL-PRS and PSCCH within a slot without PSSCH in dedicated resource pool;- Support transmitting SL-PRS according to the mapping rule between PSCCH and SL-PRS;- Support transmitting SCI format 1B;- Support receiving DCI format 3\_2;- Support downlink pathloss based open loop power control of SL-PRS (NOTE 1).UE supporting this feature shall also support *sl-PRS-RxInDedicatedResourcePool*.NOTE 1: It is not required to be supported in a band indicated with only the PC5 interface in TS 38.101-1 [11] Table 5.2E.1-1. |
| ***sl-PRS-TxScheme2InDedicatedResourcePool***Indicates whether UE supports transmitting SL-PRS scheme 2 in a dedicated resource pool, and is comprised of the following functional components:- Support transmitting SL-PRS and PSCCH within a slot without PSSCH in dedicated resource pool;- Support transmitting SL-PRS according to the mapping rule between PSCCH and SL-PRS;- Support transmitting SCI format 1B.UE supporting this feature shall also support at least one of *sl-PRS-TxRandomSelection* or *sl-PRS-TxUsingFullSensing-r18* defined in TS 38.331 [2]. |

End of the change