3GPP TSG-RAN WG3 Meeting #114bis-e R3-22xxxx

Online, 17 – 26 January 2022

**Agenda item: 19.2.3**

**Source: Nokia, Nokia Shanghai Bell, others?**

**Title:** **(TP for NR\_pos\_enh BL CR for TS 38.455) Further details for on-demand PRS**

**Document for: Discussion and Decision**

# 1 Introduction

This TP for NRPPa captures the agreements from CB # 1903\_Pos\_OnDemandPRS.

V1:

Yellow highlight: From original R3-220352 (Nokia), but with unagreeable text removed

Blue highlight: Delta on top (from Huawei comments)

“changes on changes” have been fixed.

ASN.1 has also been added.

# TP for TS 38.455 BL CR

*Start of Text Proposal for TS 38.455 BL CR*

9.1.1.a1 PRS CONFIGURATION REQUEST

This message is sent by LMF to request NG-RAN node configuring the PRS transmission.

Direction: LMF → NG-RAN node.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.3 |  | YES | reject |
| NRPPa Transaction ID | M |  | 9.2.4 |  | - |  |
| **PRS TRP List** |  | *1* |  |  | YES | ignore |
|  **>PRS TRP Item** |  | *1 .. <maxnoTRPs>* |  |  | EACH | ignore |
| >>TRP ID | M |  | 9.2.24 |  | - |  |
| >>Requested DL PRS Transmission Characteristics | O |  | 9.2.x1 |  | YES | ignore |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoTRPs | Maximum no. of TRPs in a NG-RAN node. Value is 65535 |

Editor’s Note: whether the PRS Configuration granularity per UE is supported need further check

Editor’s Note: whether the PRS Configuration granularity per UE is supported need further check Start/End could be aligned on existing IE e.g. SFN InitTime, Time Stamp

*Next Change*

### 9.2.x1 Requested DL PRS Transmission Characteristics

This IE contains the requested PRS configuration for transmission by the LMF.

Editor’s Note: All details of this IE are FFS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| **Requested DL-PRS Resource Set List** |  | *1* |  |  |
| **>Requested DL-PRS Resource Set Item** |  | *1..<maxnoofPRSresourceSet>* |  |  |
|  |  |  |  |  |
| >>PRS bandwidth | O |  | INTEGER(1..63)  | 24,28,…,272 PRBs |
| >>Comb Size | O |  | ENUMERATED(2, 4, 6, 12, …)  |  |
| >>Resource Set Periodicity | O |  | ENUMERATED(4,5,8,10,16,20,32,40,64,80,160,320,640,1280,2560,5120,10240,20480,40960,81920,…) |  |
| >>Resource Repetition Factor | O |  | ENUMERATED(rf1,rf2,rf4,rf6,rf8,rf16,rf32,…)  |  |
| >>Resource Number of Symbols | O |  | ENUMERATED(n2,n4,n6,n12,…) |  |
| >>Requested DL-PRS Resource List | O |  | 9.2.x1b |  |
| Number of Frequency Layers | O |  | INTEGER(1..4) |  |
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| **Range bound** | **Explanation** |
| maxnoofPRSresourceSet | Maximum no of PRS resources set. Value is 8. |

Editor’s Note: whether the PRS Configuration granularity per UE is supported need further check

Editor’s Note: whether the PRS Configuration granularity per UE is supported need further check Start/End could be aligned on existing IE e.g. SFN InitTime, Time Stamp

### 9.2.x1b Requested DL-PRS Resource List

This IE contains the requested DL-PRS resource list.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| **Requested DL-PRS Resource List** |  | *1* |  | *NR-DL-PRS-Resource-r16* as defined in TS 37.355 [14] |
| >**Requested DL-PRS Resource Item** |  | *1..<maxnoofPRSresource>* |  |  |
|  |  |  |  |  |
| >>CHOICE QCL Info |  O |  |  |  |
| >>>SSB |  |  |  |  |
| >>>>NR PCI | M |  | INTEGER(0..1007) |  |
| >>>>SSB Index | O |  | INTEGER(0..63) |  |
| >>>DL-PRS |  |  |  |  |
| >>>>QCL Source PRS Resource Set ID | M |  | INTEGER(0..7) |  |
| >>>>QCL Source PRS Resource ID  | O |  | INTEGER(0..63) | If it is absent, the QCL source PRS resource ID is the same as the PRS resource ID |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofPRSresource | Maximum no of PRS resources per PRS resource set. Value is 64. |

Editor’s Note: whether the PRS Configuration granularity per UE is supported need further check

Editor’s Note: whether the PRS Configuration granularity per UE is supported need further check Start/End could be aligned on existing IE e.g. SFN InitTime, Time Stamp

*Next Change*

9.2.x3 On-demand PRS TRP Information [FFS]

This IE contains on-demand PRS information for the TRP.

Editor’s Note: All details of this IE are FFS, e.g. usage of MIN/MAX

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| PRS Bandwidth Minimum | M |  | INTEGER(1..63) |  |
| PRS Bandwidth Maximum | M |  | INTEGER(1..63) |  |
| Allowed PRS Periodicity | M |  | BITSTRING(SIZE(8))FFS |  |

*Next Change*

*Next Change*

9.3.5 Information Element definitions

\*\* SKIPPING UNCHANGED TEXT \*\*

OnDemandTRPPRS-Info ::= SEQUENCE {

 pRSBandwidthMinimum INTEGER(1..63),

 pRSBandwidthMaximum INTEGER(1..63),

 allowedPRSPeriodicity BIT STRING(SIZE(8)), -- FFS

 iE-Extensions ProtocolExtensionContainer { { OnDemandTRPPRS-Info-ExtIEs} } OPTIONAL,

 ...

}

OnDemandTRPPRS-Info-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

\*\* SKIPPING UNCHANGED TEXT \*\*

PRSTRPList ::= SEQUENCE (SIZE(1.. maxnoTRPs)) OF PRSTRPItem

PRSTRPItem ::= SEQUENCE {

 tRP-ID TRP-ID,

 requestedDLPRSTransmissionCharacteristics RequestedDLPRSTransmissionCharacteristics OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { PRSTRPItem-ExtIEs} } OPTIONAL,

 ...

}

PRSTRPItem-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

\*\* SKIPPING UNCHANGED TEXT \*\*

RequestedDLPRSResourceSet-List ::= SEQUENCE (SIZE (1..maxnoofPRSresourceSet)) OF RequestedDLPRSResourceSet-Item

RequestedDLPRSResourceSet-Item ::= SEQUENCE {

 pRSbandwidth INTEGER(1..63) OPTIONAL,

 combSize ENUMERATED{n2, n4, n6, n12, ...} OPTIONAL,

 resourceSetPeriodicity ENUMERATED{n4,n5,n8,n10,n16,n20,n32,n40,n64,n80,n160,n320,n640,n1280,n2560,n5120,n10240,n20480,n40960, n81920,...} OPTIONAL,

 resourceRepetitionFactor ENUMERATED{rf1,rf2,rf4,rf6,rf8,rf16,rf32,...} OPTIONAL,

 resourceNumberofSymbols ENUMERATED{n2,n4,n6,n12,...} OPTIONAL,

 requestedDLPRSResource-List RequestedDLPRSResource-List OPTIONAL,

 numberofFrequencyLayers INTEGER(1..4) OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { RequestedDLPRSResourceSet-Item-ExtIEs} } OPTIONAL,

 ...

}

RequestedDLPRSResourceSet-Item-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

RequestedDLPRSResource-List::= SEQUENCE (SIZE (1..maxnoofPRSresource)) OF RequestedDLPRSResource-Item

RequestedDLPRSResource-Item ::= SEQUENCE {

 qCLInfo PRSResource-QCLInfo OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { RequestedDLPRSResource-Item-ExtIEs} } OPTIONAL,

 ...

}

RequestedDLPRSResource-Item-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

*End of Text Proposal for TS 38.455 BL CR*