**3GPP TSG-RAN3 Meeting #125bisR3-24xxxx**

**Hefei, China, 14-18 Oct, 2024**

**Agenda Item:** 12.2

**Source:**  ZTE Corporation, Nokia, Nokia Shanghai Bell

**Title:**  (TP to 38.455) Support of location service involving WAB

**Document for:** Discussion

# Introduction

During RAN#105 meeting, a new WI on additional topological enhancements for NR has been agreed in [1]. In this contribution, provide corresponding TPs to TS 38.455.

# Discussion

This contribution provides TP to TS 38.455 to support LCS involving WAB-node.

# Conclusion

# Reference

1. RP-242395 New WID on additional topological enhancements for NR, NTT DOCOMO, INC., AT&T

# Annex: TP to TS 38.455

-------------------------------------------Start of changes-------------------------------------------

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

**gNB:** as defined in TS 38.300 [3].

**NG-RAN node:** as defined in TS 38.300 [3].

**ng-eNB:** as defined in TS 38.300 [3].

**Mobile IAB-MT**: as defined in TS 38.300 [3].

WAB-MT: as defined in TS 38.300 [3].

-------------------------------------------Next change-------------------------------------------

#### 8.2.8.2 Successful Operation



Figure 8.2.8.2-1: TRP Information Exchange procedure, successful operation

The LMF initiates the procedure by sending a TRP INFORMATION REQUEST message. The NG-RAN node responds with a TRP INFORMATION RESPONSE message that contains the requested TRP information.

If the *TRP List* IE is included in the TRP INFORMATION REQUEST message, the NG-RAN node should include in the TRP INFORMATION RESPONSE message, the requested information for all TRPs included in the *TRP List* IE.

If the *TRP List* IE is not included in the TRP INFORMATION REQUEST message, the NG-RAN node should include the requested information for all TRPs hosted by the NG-RAN node in the TRP INFORMATION RESPONSE message

If the *PRS Muting* IE is included in the *PRS Configuration* IE in the TRP INFORMATION RESPONSE message, the LMF may take it into account as the muting information for the given PRS resource set.

If the *QCL Info* IE is included in the *PRS Configuration* IE in the TRP INFORMATION RESPONSE message, the LMF may take it into account for the given PRS resource list.

If the *DL-PRS Resource Coordinates* IE is included in the *Geographical Coordinates* IE in the *TRP Information* IE in the TRP INFORMATION RESPONSE message, the LMF may take it into account as the DL PRS Resource Coordinates relative to the TRP coordinate.

If the *Mobile IAB-MT UE ID* IE is included in the *TRP Information* IE in the TRP INFORMATION RESPONSE message, the LMF shall, if supported, use this information to determine an updated location of the Mobile TRP as specified in TS 23.273 [20].

If the *TRP Information Type Item* IE is set to 'mobile trp location info', the NG-RAN node shall, if supported, derive the location of the Mobile TRP as specified in TS 23.273 [20] and include the *Mobile TRP Location Information* in the TRP INFORMATION RESPONSE message.

If the *WAB-MT UE ID* IE is included in the *TRP Information* IE in the TRP INFORMATION RESPONSE message, the LMF shall, if supported, use this information to determine an updated location of the Mobile TRP as specified in TS 23.273 [20].

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### 9.2.25 TRP Information

The *TRP Information* IE contains information for one TRP within an NG-RAN node.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| TRP ID | M |  | 9.2.24 |  | - |  |
| **TRP Information Type** |  | *1 .. <maxnoTRPInfoTypes>* |  |  | - |  |
| >CHOICE *TRP Information Item* | M |  |  |  | - |  |
| *>>NR PCI* |  |  | INTEGER (0..1007) | NR Physical Cell ID |  |  |
| *>>NR CGI* |  |  | 9.2.9 |  |  |  |
| *>>NR ARFCN* |  |  | INTEGER (0..3279165) |  |  |  |
| *>>PRS Configuration* |  |  | 9.2.44 |  |  |  |
| *>>SSB Information* |  |  | 9.2.54 |  |  |  |
| *>>SFN Initialisation Time* |  |  | Relative Time 1900  9.2.36 |  |  |  |
| *>>Spatial Direction Information* |  |  | 9.2.45 |  |  |  |
| *>>Geographical Coordinates* |  |  | 9.2.46 |  |  |  |
| *>>TRP type* |  |  | ENUMERATED (prs-only-tp, srs-only-rp, tp, rp, trp, …, mobile trp, mobile trp for wab) | TS 38.305 [18] | YES | reject |
| *>>On-demand PRS TRP Information* |  |  | 9.2.65 |  | YES | reject |
| *>>TRP Tx TEG Association* |  |  | 9.2.79 |  | YES | reject |
| *>>TRP Beam Antenna Information* |  |  | 9.2.82 |  | YES | reject |
| >>Mobile TRP Location Information | M |  | 9.2.88 |  | YES | ignore |
| >>Common TA Parameters | M |  | 9.2.89 |  | YES | reject |
| Mobile IAB-MT UE ID | C-ifMobileTRP |  | OCTET STRING | The UE ID of the IAB-MT associated with the mobile TRP. Includes the GPSI as defined in TS 29.571 [21] | YES | reject |
| WAB-MT UE ID | C-ifMobileTRPforWAB |  | OCTET STRING | The UE ID of the WAB-MT associated with the mobile TRP. Includes the GPSI as defined in TS 29.571 [21] | YES | reject |

|  |  |
| --- | --- |
| Condition | Explanation |
| ifMobileTRP | This IE shall be present if the *TRP type* IE is set to the value "mobile trp" |
| ifMobileTRPforWAB | This IE shall be present if the *TRP type* IE is set to the value "mobile trp for wab" |

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### 9.3.5 Information Element definitions

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-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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-- Information Element Definitions

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-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NRPPA-IEs {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-access (22) modules (3) nrppa (4) version1 (1) nrppa-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

**>>>>>>>>>>>>>>>>>>>Unchanged parts are skipped<<<<<<<<<<<<<<<<<<<**

id-NR-PCI,

id-SCS-SpecificCarrier,

id-MeasBasedOnAggregatedResources,

id-UEReportingInterval-milliseconds,

id-WAB-MT-UE-ID,

**>>>>>>>>>>>>>>>>>>>Unchanged parts are skipped<<<<<<<<<<<<<<<<<<<**

-- M

**>>>>>>>>>>>>>>>>>>>Unchanged parts are skipped<<<<<<<<<<<<<<<<<<<**

WAB-MT-UE-ID ::= OCTET STRING

**>>>>>>>>>>>>>>>>>>>Unchanged parts are skipped<<<<<<<<<<<<<<<<<<<**

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**>>>>>>>>>>>>>>>>>>>Unchanged parts are skipped<<<<<<<<<<<<<<<<<<<**

TRPInformation ::= SEQUENCE {

tRP-ID TRP-ID,

tRPInformationTypeResponseList TRPInformationTypeResponseList,

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

...

}

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

{ ID id-Mobile-IAB-MT-UE-ID CRITICALITY reject EXTENSION Mobile-IAB-MT-UE-ID PRESENCE optional},

--This IE shall be present if the *TRP type* IE is set to the value "mobile trp"

ID id-WAB-MT-UE-ID CRITICALITY reject EXTENSION WAB-MT-UE-ID PRESENCE optional},

--This IE shall be present if the *TRP type* IE is set to the value "mobile trp for wab"

...

}

**>>>>>>>>>>>>>>>>>>>Unchanged parts are skipped<<<<<<<<<<<<<<<<<<<**

TRPType ::= ENUMERATED {

prsOnlyTP,

srsOnlyRP,

tp,

rp,

trp,

...,

mobile-trp,

Mobile-trp-for-wab

}

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### 9.3.7 Constant definitions

-- ASN1START

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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-- Constant definitions

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-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

**>>>>>>>>>>>>>>>>>>>Unchanged parts are skipped<<<<<<<<<<<<<<<<<<<**

id-NR-PCI ProtocolIE-ID ::= 155

id-SCS-SpecificCarrier ProtocolIE-ID ::= 156

id-MeasBasedOnAggregatedResources ProtocolIE-ID ::= 157

id-UEReportingInterval-milliseconds ProtocolIE-ID ::= 158

id-WAB-MT-UE-ID ProtocolIE-ID ::= xxx

END

-- ASN1STOP

-------------------------------------------End of changes-------------------------------------------