**3GPP TSG-RAN WG2 Meeting #121 R2-230XXXX**

**Athens , Greece, 27th Feb- 3rd Mar, 2023**

**Agenda item: 8.10.2**

**Source: Huawei, HiSilicon**

**Title: [AT121][652][IDC] Discussion on FDM solution(Huawei)**

**Document for:**  **Discussion**

# 1. Introduction

This paper is to trigger the following email discussion of IDC FDM solutions:

* [AT121][652][IDC] Discussion on FDM solution(Huawei)

      Scope: Leftover issues indicated in the Note; TP for ASN.1 and procedure parts.

 Additional open issue on whether LTE MN can configure R18 NR IDC for NR side.

 Intended outcome: Report to Friday CB session in R2-2302071

 Deadline: Thursday 2023-03-02 19:00 EET

## 1.1 Contacts

Contact person for each participating company:

|  |  |  |
| --- | --- | --- |
| Company | Name | Email Address |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

# 2. Discussion

During the online discussion in the IDC session today there were some open points that were identified for the proposals in [Post120][652][IDC] which needed further confirmation/ discussion. This email discussion seeks further company views for these open points.

**Open Point 1– Whether gNB should configure the candidate frequency ranges using (centre frequency + bandwidth) for which the UE should report IDC issues**

During the discussion different view were expressed, some companies expressed the view that a reasonable gNB implementation has good knowledge of the frequency range where the IDC problem could occur and such configuration from the network will result in controlling the reporting from the network and also power saving as the UE does not have check for the IDC issue over the entire carrier frequencies, while the other companies thought gNB has no idea about where such IDC issues could happen and the reporting could be left to UE implementation.

**It is assumed by the rapporteur that a reasonable gNB will configure candidate serving frequencies in the region which is close/ adjacent to channels used by the other non- 3GPP technologies on which it will apply scheduling restrictions to resolve the IDC problems**.

If such configuration is not provided by the gNB, there can be following potential issues which can arise

1. There will be no way for the network to control reporting from the UE.
2. UE will be unsure if it should report actually affected frequency range that is far away from the NR carrier centre frequency as shown in figure below as there is no guidance from the network. Some UE implementation will send the reports while others may decide not to.



Figure 1 – Case 1 - the affected frequency range includes the centre frequency



Figure 1 – Case 2 - the affected frequency range does not include the centre frequency

1. If the gNB implementation/configuration is such that it addresses IDC issues only if it receives the report that fall within certain preconfigured frequency ranges, many of the reports from the UE covering entire carrier frequency will be discarded silently by the gNB without taking any action.

All these issues will cause excessive signalling and waste of air interface resources.

Question 1 – To prevent such issues from happening, do companies agree that it is beneficial for the network/gNB to configure the candidate frequency ranges using (centre frequency + bandwidth) for which the UE should report IDC issues.

|  |  |  |
| --- | --- | --- |
| **Company** | **Answers** **(Yes/ No)** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Question 2 – If the answer to Question 1 is “yes” Do you agree that ASN.1 framework and field description for gNB configuration around which UE is requested to report IDC issues for FDM solution enhancements can be considered as the starting point in the Text proposal. The Bandwidth values can be fine-tuned further and the procedure text can be written after these are agreed.

|  |  |  |
| --- | --- | --- |
| **Company** | **Answers** **(Yes/ No)** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

During the discussion some companies also expressed the view that UE should be allowed to report the actual affected frequency ranges that may either partly of fully lie outside the range configured by gNB as shown in figure below.



**One thing to note is that even though the UE reports the affected frequency ranges outside the gNB’s configured ranges, gNB may not take any actions on the frequency ranges that lie outside its configured ranges.**

Question 3 –Do companies agree that the UE does not follow the network instructions and the UE should be allowed to report the frequency range where a part of or whole of the actual affected range is outside the frequency range configured by the gNB?

If the answer is “yes” the proponent companies are requested to provide the what will be the benefits of deviating from the legacy principles of the network providing the configuration and the UE following it.

|  |  |  |
| --- | --- | --- |
| **Company** | **Answers** **(Yes/ No)** | **If the answer is “yes” please provide the what will be the benefits of the UE providing such reports to the network.** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Open Point 2– Confirm the usage of direction of inference IE in the enhanced FDM solution**

We have agreed to add the direction of interference for the reporting for the agreed Option 1. The direction of interference shall serve the same purpose as in the existing FDM solution as described in the field description below

***interferenceDirection***

Indicates the direction of IDC interference. Value *nr* indicates that only NR is victim of IDC interference, value *other* indicates that only another radio is victim of IDC interference and value *both* indicates that both NR and another radio are victims of IDC interference. The other radio refers to either the ISM radio or GNSS (see TR 36.816 [44]).

Considering that the actually affected frequency range for the interference from NR TX to non-3GPP RX and the interference from non-3GPP TX to NR RX could be different as shown in Figure below. The UE can include two entries in a report with different interference direction if the actual affected frequency regions in red and blue colour for option 1 is different. If they are the same, UE can include one entry for the frequency range with the interference direction set to “both”.



The example of such entries for the enhanced FDM solution is given below .

AffectedCarrierFreqRange 1 : {

 centerFreq : Centre freq for Red region;

 affectedBandwidth : BW of Red region;

 interferencedirection: Other;

 }

AffectedCarrierFreqRange 2 : {

 centerFreq : Centre freq for Blue region;

 affectedBandwidth : : BW of Blue region;

 interferencedirection: NR;

 }

Such a report from the UE will provide precise information to the gNB for addressing the IDC issue in UL and DL direction.

Question 4 –Can companies confirm that for one candidate frequency range indicated by the gNB, if the UE detects interference in both directions, the UE can report two affected frequency ranges with the respective interference direction ?

|  |  |  |
| --- | --- | --- |
| **Company** | **Answers** **(Yes/ No)** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Open Point 3– Further discuss whether the inter node co-ordination for IDC solutions to address the IMD issue where combination of frequencies involving MN and SN are affected is needed**

During the online discussions we could not discuss whether the inter node co-ordination for IDC solutions to address the IMD issue where combination of frequencies involving MN and SN are affected is needed due to limited time. Hence the companies are encouraged to provide further views on these through the following questions

Question 5 –Do you think whether the inter node co-ordination between MN and SN for IDC solutions to address the IMD issue where combination of frequencies involving MN and SN are affected is needed? If it is needed what would be the reason for having such coordination?

|  |  |  |
| --- | --- | --- |
| **Company** | **Answers** **(Yes/ No)** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Question 6 – if the answer to the above question is yes, please provide summary/key points of information to be exchanged between MN and SN?

|  |  |  |
| --- | --- | --- |
| **Company** | **Answers** **(Yes/ No)** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Open Point 4– Any additional coordination is needed between MN and SN for applying TDM solution to resolve the problem when network receives the reporting from UE.**

During the online discussion for TDM solution it was agreed that Per CG pattern is supported for MR-DC. SN can configure the UE to report the TDM assistance information directly to SN, either through SRB 1 (if SRB3 is not configured) or SRB 3. However, there is one open issue whether any additional coordination is needed for network to resolve the problem when network receives the reporting from UE including TDM assistance information. Company views on this is invited

Question 7 – Do you think whether any additional coordination is needed between MN and SN for applying TDM solution to resolve the problem when network receives the reporting from UE that includes TDM assistance information?

|  |  |  |
| --- | --- | --- |
| **Company** | **Answers** **(Yes/ No)** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Open Point 5– Additional open issue on whether LTE MN can configure R18 NR IDC for NR side**

During the online discussion one point that came up was whether LTE MN can configure the UE with R18 NR IDC configuration. Company views on this is invited

Question 8 – Do you think whether LTE MN can configure the UE with R18 NR IDC configuration?

|  |  |  |
| --- | --- | --- |
| **Company** | **Answers** **(Yes/ No)** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

# 3. Conclusion

After collecting company’s feedbacks, the discussion on the IDC FDM solution enhancements is summarized as follows:

**TBD**

# 4. Text proposal

Text proposal based on the email discussion above is given below for TS38.331 which can be considered as the starting point for capturing the details of providing the gNB configuration and UE reporting for the IDC Enhancements in R18.

Further details to be added if the email discussion converges

*START OF CHANGE FOR UE REPORTING*

#### – *UEAssistanceInformation*

The *UEAssistanceInformation* message is used for the indication of UE assistance information to the network.

Signalling radio bearer: SRB1, SRB3

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to Network

*UEAssistanceInformation message*

-- ASN1START

-- TAG-UEASSISTANCEINFORMATION-START

UEAssistanceInformation ::= SEQUENCE {

 criticalExtensions CHOICE {

 ueAssistanceInformation UEAssistanceInformation-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

*<skipped>*

UEAssistanceInformation-v1610-IEs ::= SEQUENCE {

 idc-Assistance-r16 IDC-Assistance-r16 OPTIONAL,

 *<skipped>*

 nonCriticalExtension UEAssistanceInformation-v1700-IEs OPTIONAL

}

UEAssistanceInformation-v1700-IEs ::= SEQUENCE {

 ul-GapFR2-Preference-r17 UL-GapFR2-Preference-r17 OPTIONAL,

 musim-Assistance-r17 MUSIM-Assistance-r17 OPTIONAL,

 overheatingAssistance-r17 OverheatingAssistance-r17 OPTIONAL,

 maxBW-PreferenceFR2-2-r17 MaxBW-PreferenceFR2-2-r17 OPTIONAL,

 maxMIMO-LayerPreferenceFR2-2-r17 MaxMIMO-LayerPreferenceFR2-2-r17 OPTIONAL,

 minSchedulingOffsetPreferenceExt-r17 MinSchedulingOffsetPreferenceExt-r17 OPTIONAL,

 rlm-MeasRelaxationState-r17 BOOLEAN OPTIONAL,

 bfd-MeasRelaxationState-r17 BIT STRING (SIZE (1..maxNrofServingCells)) OPTIONAL,

 nonSDT-DataIndication-r17 SEQUENCE {

 resumeCause-r17 ResumeCause OPTIONAL

 } OPTIONAL,

 scg-DeactivationPreference ENUMERATED { scgDeactivationPreferred, noPreference } OPTIONAL,

 uplinkData-r17 ENUMERATED { true } OPTIONAL,

 rrm-MeasRelaxationFulfilment-r17 BOOLEAN OPTIONAL,

 propagationDelayDifference-r17 PropagationDelayDifference-r17 OPTIONAL,

 nonCriticalExtension UEAssistanceInformation-v18xy-IEs OPTIONAL

}

UEAssistanceInformation-v18xy-IEs ::= SEQUENCE {

 idc-Assistance-r18 IDC-Assistance-r18 OPTIONAL, nonCriticalExtension SEQUENCE {} OPTIONAL

}

IDC-Assistance-r16 ::= SEQUENCE {

 affectedCarrierFreqList-r16 AffectedCarrierFreqList-r16 OPTIONAL,

 affectedCarrierFreqCombList-r16 AffectedCarrierFreqCombList-r16 OPTIONAL,

 ...

}

IDC-Assistance-r18 ::= SEQUENCE {

fdm-AssistanceInfo-r18 FDM-AssistanceInfo-r18 OPTIONAL,

 ...

}

FDM-AssistanceInfo-r18::= SEQUENCE {

 affectedCarrierFreqRangeList-r18 AffectedCarrierFreqRangeList-r18 OPTIONAL,

 affectedCarrierFreqRangeCombList-r18 AffectedCarrierFreqRangeCombList-r18 OPTIONAL,

 ...

}

AffectedCarrierFreqList-r16 ::= SEQUENCE (SIZE (1.. maxFreqIDC-r16)) OF AffectedCarrierFreq-r16

AffectedCarrierFreq-r16 ::= SEQUENCE {

 carrierFreq-r16 ARFCN-ValueNR,

 interferenceDirection-r16 ENUMERATED {nr, other, both, spare}

}

AffectedCarrierFreqCombList-r16 ::= SEQUENCE (SIZE (1..maxCombIDC-r16)) OF AffectedCarrierFreqComb-r16

AffectedCarrierFreqComb-r16 ::= SEQUENCE {

 affectedCarrierFreqComb-r16 SEQUENCE (SIZE (2..maxNrofServingCells)) OF ARFCN-ValueNR OPTIONAL,

 victimSystemType-r16 VictimSystemType-r16

}

VictimSystemType-r16 ::= SEQUENCE {

 gps-r16 ENUMERATED {true} OPTIONAL,

 glonass-r16 ENUMERATED {true} OPTIONAL,

 bds-r16 ENUMERATED {true} OPTIONAL,

 galileo-r16 ENUMERATED {true} OPTIONAL,

 navIC-r16 ENUMERATED {true} OPTIONAL,

 wlan-r16 ENUMERATED {true} OPTIONAL,

 bluetooth-r16 ENUMERATED {true} OPTIONAL,

 ...

}

AffectedCarrierFreqRangeList-r18::= SEQUENCE (SIZE (1.. maxFreqIDC-r18)) OF AffectedCarrierFreqRange-r18

AffectedCarrierFreqRange-r18 ::= SEQUENCE {

 centerFreq-r18 ARFCN-ValueNR,

 affectedBandwidth-r18 ENUMERATED {mhz5, mhz10, mhz20, mhz30, mhz40, mhz50, mhz60, mhz80, mhz100, mhz200, mhz300, mhz400, FFS\_spare\_values},

interferenceDirection-r16 ENUMERATED {nr, other, both, spare}

Editor‘s Note: affectedBandwidth values are FFS and needs to be fine tuned to cover all the scenarios involving Wi-Fi, GNSS, BT

}

AffectedCarrierFreqRangeCombList-r18::= SEQUENCE (SIZE (1.. maxFreqIDC-r18)) OF AffectedCarrierFreqRangeComb-r18

AffectedCarrierFreqRangeComb-r18::= SEQUENCE {

 Editor‘s Note: Details of the ASN.1 structure is FFS

}

*<skipped>*

-- TAG-UEASSISTANCEINFORMATION-STOP

-- ASN1STOP

|  |
| --- |
| *UEAssistanceInformation* field descriptions |
| ***affectedCarrierFreqList***Indicates a list of NR carrier frequencies that are affected by IDC problem. |
| ***affectedCarrierFreqCombList***Indicates a list of NR carrier frequencie combinations that are affected by IDC problems due to Inter-Modulation Distortion and harmonics from NR when configured with UL CA. |
| ***AffectedCarrierFreqRangeList***Indicates a list of NR carrier frequencies range that are affected by the IDC problem |
| ***centerFreq***Indicates the center frequency of the carrier frequency range which is affected by the IDC problem |
| ***affectedBandwidth***Indicates the bandwidth of the carrier frequency range around the center frequency which is actually affected by the IDC problem.  |
| ***victimSystemType***Indicate the list of victim system types to which IDC interference is caused from NR when configured with UL CA. Value *gps*, *glonass*, *bds*, *galileo* and *navIC* indicates the type of GNSS. Value *wlan* indicates WLAN and value *bluetooth* indicates Bluetooth. |

*END OF CHANGE FOR UE REPORTING*

*START OF CHANGE FOR gNB CONFIGURATION*

#### – *OtherConfig*

The IE *OtherConfig* contains configuration related to miscellaneous other configurations.

*OtherConfig* information element

-- ASN1START

-- TAG-OTHERCONFIG-START

OtherConfig ::= SEQUENCE {

 delayBudgetReportingConfig CHOICE{

 release NULL,

 setup SEQUENCE{

 delayBudgetReportingProhibitTimer ENUMERATED {s0, s0dot4, s0dot8, s1dot6, s3, s6, s12, s30}

 }

 } OPTIONAL -- Need M

}

OtherConfig-v1540 ::= SEQUENCE {

 overheatingAssistanceConfig SetupRelease {OverheatingAssistanceConfig} OPTIONAL, -- Need M

 ...

}

CandidateServingFreqListNR-r16 ::= SEQUENCE (SIZE (1..maxFreqIDC-r16)) OF ARFCN-ValueNR

OtherConfig-v1610 ::= SEQUENCE {

 idc-AssistanceConfig-r16 SetupRelease {IDC-AssistanceConfig-r16} OPTIONAL, -- Need M

 drx-PreferenceConfig-r16 SetupRelease {DRX-PreferenceConfig-r16} OPTIONAL, -- Need M

 maxBW-PreferenceConfig-r16 SetupRelease {MaxBW-PreferenceConfig-r16} OPTIONAL, -- Need M

 maxCC-PreferenceConfig-r16 SetupRelease {MaxCC-PreferenceConfig-r16} OPTIONAL, -- Need M

 maxMIMO-LayerPreferenceConfig-r16 SetupRelease {MaxMIMO-LayerPreferenceConfig-r16} OPTIONAL, -- Need M

 minSchedulingOffsetPreferenceConfig-r16 SetupRelease {MinSchedulingOffsetPreferenceConfig-r16} OPTIONAL, -- Need M

 releasePreferenceConfig-r16 SetupRelease {ReleasePreferenceConfig-r16} OPTIONAL, -- Need M

 referenceTimePreferenceReporting-r16 ENUMERATED {true} OPTIONAL, -- Need R

 btNameList-r16 SetupRelease {BT-NameList-r16} OPTIONAL, -- Need M

 wlanNameList-r16 SetupRelease {WLAN-NameList-r16} OPTIONAL, -- Need M

 sensorNameList-r16 SetupRelease {Sensor-NameList-r16} OPTIONAL, -- Need M

 obtainCommonLocation-r16 ENUMERATED {true} OPTIONAL, -- Need R

 sl-AssistanceConfigNR-r16 ENUMERATED{true} OPTIONAL -- Need R

}

OtherConfig-v1700 ::= SEQUENCE {

 ul-GapFR2-PreferenceConfig-r17 ENUMERATED {true} OPTIONAL, -- Need R

 musim-GapAssistanceConfig-r17 SetupRelease {MUSIM-GapAssistanceConfig-r17} OPTIONAL, -- Need M

 musim-LeaveAssistanceConfig-r17 SetupRelease {MUSIM-LeaveAssistanceConfig-r17} OPTIONAL, -- Need M

 successHO-Config-r17 SetupRelease {SuccessHO-Config-r17} OPTIONAL, -- Need M

 maxBW-PreferenceConfigFR2-2-r17 ENUMERATED {true} OPTIONAL, -- Cond maxBW

 maxMIMO-LayerPreferenceConfigFR2-2-r17 ENUMERATED {true} OPTIONAL, -- Cond maxMIMO

 minSchedulingOffsetPreferenceConfigExt-r17 ENUMERATED {true} OPTIONAL, -- Cond minOffset

 rlm-RelaxationReportingConfig-r17 SetupRelease {RLM-RelaxationReportingConfig-r17} OPTIONAL, -- Need M

 bfd-RelaxationReportingConfig-r17 SetupRelease {BFD-RelaxationReportingConfig-r17} OPTIONAL, -- Need M

 scg-DeactivationPreferenceConfig-r17 SetupRelease {SCG-DeactivationPreferenceConfig-r17} OPTIONAL, -- Cond SCG

 rrm-MeasRelaxationReportingConfig-r17 SetupRelease {RRM-MeasRelaxationReportingConfig-r17} OPTIONAL, -- Need M

 propDelayDiffReportConfig-r17 SetupRelease {PropDelayDiffReportConfig-r17} OPTIONAL -- Need M

}

OtherConfig-v18Xy ::= SEQUENCE {

 idc-AssistanceConfig-r18 SetupRelease {IDC-AssistanceConfig-r18} OPTIONAL -- Need M

}

MUSIM-GapAssistanceConfig-r17 ::= SEQUENCE {

 musim-GapProhibitTimer-r17 ENUMERATED {s0, s0dot1, s0dot2, s0dot3, s0dot4, s0dot5, s1, s2, s3, s4, s5, s6, s7, s8, s9, s10}

}

MUSIM-LeaveAssistanceConfig-r17 ::= SEQUENCE {

 musim-LeaveWithoutResponseTimer-r17 ENUMERATED {ms10, ms20, ms40, ms60, ms80, ms100, spare2, spare1}

}

SuccessHO-Config-r17 ::= SEQUENCE {

 thresholdPercentageT304-r17 ENUMERATED {p40, p60, p80, spare5, spare4, spare3, spare2, spare1} OPTIONAL, --Need R

 thresholdPercentageT310-r17 ENUMERATED {p40, p60, p80, spare5, spare4, spare3, spare2, spare1} OPTIONAL, --Need R

 thresholdPercentageT312-r17 ENUMERATED {p20, p40, p60, p80, spare4, spare3, spare2, spare1} OPTIONAL, --Need R

 sourceDAPS-FailureReporting-r17 ENUMERATED {true} OPTIONAL, --Need R

 ...

}

OverheatingAssistanceConfig ::= SEQUENCE {

 overheatingIndicationProhibitTimer ENUMERATED {s0, s0dot5, s1, s2, s5, s10, s20, s30,

 s60, s90, s120, s300, s600, spare3, spare2, spare1}

}

IDC-AssistanceConfig-r16 ::= SEQUENCE {

 candidateServingFreqListNR-r16 CandidateServingFreqListNR-r16 OPTIONAL, -- Need R

 ...

}

DRX-PreferenceConfig-r16 ::= SEQUENCE {

 drx-PreferenceProhibitTimer-r16 ENUMERATED {

 s0, s0dot5, s1, s2, s3, s4, s5, s6, s7,

 s8, s9, s10, s20, s30, spare2, spare1}

}

MaxBW-PreferenceConfig-r16 ::= SEQUENCE {

 maxBW-PreferenceProhibitTimer-r16 ENUMERATED {

 s0, s0dot5, s1, s2, s3, s4, s5, s6, s7,

 s8, s9, s10, s20, s30, spare2, spare1}

}

MaxCC-PreferenceConfig-r16 ::= SEQUENCE {

 maxCC-PreferenceProhibitTimer-r16 ENUMERATED {

 s0, s0dot5, s1, s2, s3, s4, s5, s6, s7,

 s8, s9, s10, s20, s30, spare2, spare1}

}

MaxMIMO-LayerPreferenceConfig-r16 ::= SEQUENCE {

 maxMIMO-LayerPreferenceProhibitTimer-r16 ENUMERATED {

 s0, s0dot5, s1, s2, s3, s4, s5, s6, s7,

 s8, s9, s10, s20, s30, spare2, spare1}

}

MinSchedulingOffsetPreferenceConfig-r16 ::= SEQUENCE {

 minSchedulingOffsetPreferenceProhibitTimer-r16 ENUMERATED {

 s0, s0dot5, s1, s2, s3, s4, s5, s6, s7,

 s8, s9, s10, s20, s30, spare2, spare1}

}

ReleasePreferenceConfig-r16 ::= SEQUENCE {

 releasePreferenceProhibitTimer-r16 ENUMERATED {

 s0, s0dot5, s1, s2, s3, s4, s5, s6, s7,

 s8, s9, s10, s20, s30, infinity, spare1},

 connectedReporting ENUMERATED {true} OPTIONAL -- Need R

}

RLM-RelaxationReportingConfig-r17 ::= SEQUENCE {

 rlm-RelaxtionReportingProhibitTimer ENUMERATED {s0, s0dot5, s1, s2, s5, s10, s20, s30,

 s60, s90, s120, s300, s600, infinity, spare2, spare1}

}

BFD-RelaxationReportingConfig-r17 ::= SEQUENCE {

 bfd-RelaxtionReportingProhibitTimer ENUMERATED {s0, s0dot5, s1, s2, s5, s10, s20, s30,

 s60, s90, s120, s300, s600, infinity, spare2, spare1}

}

SCG-DeactivationPreferenceConfig-r17 ::= SEQUENCE {

 scg-DeactivationPreferenceProhibitTimer-r17 ENUMERATED {

 s0, s1, s2, s4, s8, s10, s15, s30,

 s60, s120, s180, s240, s300, s600, s900, s1800}

}

RRM-MeasRelaxationReportingConfig-r17 ::= SEQUENCE {

 s-SearchDeltaP-Stationary-r17 ENUMERATED {dB2, dB3, dB6, dB9, dB12, dB15, spare2, spare1},

 t-SearchDeltaP-Stationary-r17 ENUMERATED {s5, s10, s20, s30, s60, s120, s180, s240, s300, spare7, spare6, spare5,

 spare4, spare3, spare2, spare1}

}

PropDelayDiffReportConfig-r17 ::= SEQUENCE {

 threshPropDelayDiff-r17 ENUMERATED {ms0dot5, ms1, ms2, ms3, ms4, ms5, ms6 ,ms7, ms8, ms9, ms10, spare5,

 spare4, spare3, spare2, spare1} OPTIONAL, -- Need M

 neighCellInfoList-r17 SEQUENCE (SIZE (1..maxCellNTN-r17)) OF NeighbourCellInfo-r17 OPTIONAL -- Need M

}

NeighbourCellInfo-r17 ::= SEQUENCE {

epochTime-r17 EpochTime-r17,

ephemerisInfo-r17 EphemerisInfo-r17

}

IDC-AssistanceConfig-r18 ::= SEQUENCE {

 candidateServingFreqRangeListNR-r18 CandidateServingFreqRangeListNR-r18 OPTIONAL, -- Need R

 ...

}

CandidateServingFreqRangeListNR-r18 ::= SEQUENCE (SIZE (1..maxFreqIDC-r18)) OF CandidateServingFreqRangeNR-r18

CandidateServingFreqRangeNR-r18 ::= SEQUENCE {

 CenterFreq-r18 ARFCN-ValueNR,

 candidateBandwidth-r18 ENUMERATED {mhz5, mhz10, mhz20, mhz30, mhz40, mhz50, mhz60, mhz80, mhz100, mhz200, mhz300, mhz400}

Editor‘s Note: candidateBandwidth-r18 values are FFS

}

-- TAG-OTHERCONFIG-STOP

-- ASN1STOP

| *OtherConfig* field descriptions |
| --- |
| ***bfd-RelaxationReportingConfig***Configuration for the UE to report the relaxation state of BFD measurements. |
| ***candidateServingFreqListNR***Indicates for each candidate NR serving cells, the center frequency around which UE is requested to report IDC issues. |
| ***candidateServingFreqRangeListNR***Indicates for each candidate NR serving cells, the frequency range, indicated by the center frequency and the candidate bandwidth, around which UE is requested to report IDC issues. |
| ***centerFreq***Indicates the center frequency of the candidate serving frequency range. |
| ***candidateBandwidth***Indicates the bandwidth of the candidate serving frequency range. |
| ***connectedReporting***Indicates that the UE can report a preference to remain in RRC\_CONNECTED state following a report to leave RRC\_CONNECTED state. If absent, the UE cannot report a preference to stay in RRC\_CONNECTED state. |
| ***delayBudgetReportingProhibitTimer***Prohibit timer for delay budget reporting. Value in seconds. Value *s0* means prohibit timer is set to 0 seconds, value *s0dot4* means prohibit timer is set to 0.4 seconds, and so on. |

# 4. Reference

[1] R2-2301486 Summary of [Post120][652][IDC] Further details of FDM solution (Huawei)