**3GPP TSG RAN WG1 #104bis-e R1-21xxxxx**

e-Meeting, April 12th – 20th, 2021

Source: NTT DOCOMO, INC.

Title: Session Notes for NR UE Features

Agenda Item: 7.2.11

**Document for:** **Discussion and Decision**

**7.2.11 NR Rel-16 UE Features (4)**

R1-2103603 Summary on Rel-16 UE features related discussion Moderator (NTT DOCOMO INC.)

[104b-e-NR-UEFeatures-eMIMO-01] Email discussion/approval on how to capture the following conclusion from RAN1 #104-e in FGs 16-1a-1, 16-1g, and FG16-1g-1, till 4/15 (Ralf, AT&T)

* If one resource is used for one or multiple of BFD/RLM, it is counted as one (basic usage1)
* If one resource is used for one or multiple of NBI/PL-RS/RSRP, add 1 (basic usage 2)
* If one resource is used for L1-SINR in addition to basic usage 1 & 2, add N if referred N times by one or more CSI Reporting Settings

[104b-e-NR-UEFeature-URLLCIIoT-01] Email discussion/approval on UE features for URLLC/IIoT, till 4/16 (Hiroki, DCM)

* For FG 11-3c, FG 11-3d, FG 11-4d and FG 11-4e, add “in the same subslot” to restrict the time granularity where the two PUCCH should be supported
* For FG 11-3d and FG 11-4e, add the restriction of “consecutive symbols” for supporting the two PUCCH
* For FG 11-3e and FG 11-3f, change the plural to singular
* For FG 11-4c, FG11-4d, FG 11-4f and FG 11-4h, add the restriction that they are for two codebooks where one of the two is sub-slot based codebook, and the other is slot-based codebook
* For 11-4f, clarify it is for “two” codebooks
* Correct that FG 11-4h is to cover the missing case in 11-4d and 11-4f
* Correct that FG 11-4i is to cover the missing case in 11-4e and 11-4g

R1-2103811 Summary on [104b-e-NR-UEFeature-URLLCIIoT-01] Moderator (NTT DOCOMO INC.)

FL proposal #1

* For FG 11-3c, FG 11-3d, FG 11-4d and FG 11-4e, add “in the same subslot” to restrict the time granularity where the two PUCCH should be supported

Updated FL proposal #2

* For FG 11-4e, add the restriction of “in consecutive symbols” for supporting the two PUCCH
* [For FG 11-3d, add the restriction of “in consecutive symbols” for supporting the two PUCCH]

FL proposal #3

* For FG 11-3e and FG 11-3f, change the plural to singular

Updated FL proposal #4

* For FG 11-4c, FG11-4d, FG 11-4f and FG 11-4h, add the restriction that they are for two codebooks where one of the two is sub-slot based codebook, and the other is slot-based codebook
* Ask RAN2 to remove followings in 38.306 descriptions (by using the regular LS on updated UE features list)

|  |
| --- |
| ***twoPUCCH-Type5-r16***Indicates whether the UE supports two PUCCH of format 0 or 2 for two HARQ-ACK codebooks with one 7\*2-symbol subslot based HARQ-ACK codebook. ~~When simultaneously configured with two slot-based HARQ-ACK codebooks, the capability for each HARQ-ACK codebook is subjected to the capability reported by~~ *~~twoPUCCH-F0-2-ConsecSymbols.~~****twoPUCCH-Type6-r16***Indicates whether the UE supports two PUCCH of format 0 or 2 in consecutive symbols for two HARQ-ACK codebooks with one 2\*7-symbol subslot based HARQ-ACK codebook. ~~When simultaneously configured with two slot-based HARQ-ACK codebooks, the capability for each HARQ-ACK codebook is subjected to the capability reported by twoPUCCH-F0-2-ConsecSymbols.~~***twoPUCCH-Type8-r16***Indicates whether the UE supports one PUCCH format 0 or 2 and one PUCCH format 1, 3 or 4 in the same subslot for HARQ-ACK codebooks with one 2\*7-symbol subslot based HARQ-ACK codebook. ~~When simultaneously configured with two slot-based HARQ-ACK codebooks, the capability for each HARQ-ACK codebook is subjected to the capability reported by onePUCCH-LongAndShortFormat.~~***twoPUCCH-Type10-r16***Indicates whether the UE supports two PUCCH transmissions in the same subslot for two HARQ-ACK codebooks with one 2\*7-symbol subslot which are not covered by *twoPUCCH-Type5-r16* and *twoPUCCH-Type7-r16*. ~~When simultaneously configured with two slot-based HARQ-ACK codebooks, the capability for each HARQ-ACK codebook is subjected to the capability reported by~~ *~~twoPUCCH-AnyOthersInSlot.~~* |

FL proposal #5

* For 11-4f, clarify it is for “two” codebooks

FL proposal #6

* Correct that FG 11-4h is to cover the missing case in 11-4d and 11-4f

FL proposal #7

* Correct that FG 11-4i is to cover the missing case in 11-4e and 11-4g

[104b-e-NR-UEFeature-MRDCCA-01] Email discussion/approval on UE features for MR-DC/CA enhancement, till 4/15 (Hiroki, DCM)

* Delete “X applies per span in a slot of scheduling CC” in FG 18-5c/d

R1-2103812 Summary on [104b-e-NR-UEFeature-MRDCCA-01] Moderator (NTT DOCOMO INC.)

Updated FL proposal #1

* Modify “X applies per span in a slot of scheduling CC” to “X applies per ~~span in a~~ slot in scheduling CC” in FG 18-5c/d

[104b-e-NR-UEFeature-Others-01] Email discussion/approval on UE features that are not dedicated to specific Rel-16 WI/TEI, till 4/16 (Hiroki, DCM)

* Clarify FG3-1 as below.
	+ 5) Processing one unicast DCI scheduling DL and one unicast DCI scheduling UL per scheduling slot per scheduled CC for FDD scheduling cell
	+ 6) Processing one unicast DCI scheduling DL and 2 unicast DCI scheduling UL per scheduling slot per scheduled CC for TDD scheduling cell
* Send an LS to RAN2 to add in the description of FG 22-5c and 22-5d the following note
	+ For simultaneously Ant.Sw . + Ant.Sw SRS in intra-band CA, or in inter-band CAs with bands whose UL are switched together according to the reported UE capability, the UE expects the same configuration of xTyR across the different CCs and the SRS resources overlapped in time domain from UE perspective are from the same UE antenna ports.
* Introduce the following FGs
	+ FG22-Xa/Xb to address the missing 'cri-RI-CQI' report related UE capability
	+ Replicate FG 2-38, i.e., csi-ReportWithoutPMI, to address the NBC issue

R1-2103813 Summary on [104b-e-NR-UEFeature-Others-01] Moderator (NTT DOCOMO INC.)

FL proposal #1

* Clarify FG3-1 as below.
	+ 5) Processing one unicast DCI scheduling DL and one unicast DCI scheduling UL per scheduling slot per scheduled CC for FDD scheduling cell
	+ 6) Processing one unicast DCI scheduling DL and 2 unicast DCI scheduling UL per scheduling slot per scheduled CC for TDD scheduling cell

Updated FL proposal #2

* Ask RAN2 to add in the description of FG 22-5c and 22-5d the following note (by using regular LS on updated UE features list)
	+ For simultaneously Ant.Sw . + Ant.Sw SRS in intra-band CA, or in inter-band CAs with bands whose UL are switched together according to the reported UE capability, the UE expects the same configuration of xTyR across the different CCs and the SRS resources overlapped in time domain from UE perspective are from the same UE antenna ports.

Updated FL proposal #3

* Alt.1: Introduce the following FG to address the issues on RRC signaling overhead and UE memory related to ‘port-to-layer mapping’

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 22. NR Others | 22-X | Support of 'cri-RI-CQI' report with non-PMI-PortIndication | UE supports CSI-ReportConfig with the higher layer parameter reportQuantity set to 'cri-RI-CQI' and the higher layer parameter non-PMI-PortIndication configured | 2-38 | Yes | N/A |  | Per UE | N/A | N/A  | N/A |  | Optional with capability signalling |

* Alt.2: Address the issue on RRC signaling overhead related to ‘port-to-layer mapping’ in Rel-17 TEI

[R1-2102490](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_104b%5CDocs%5CR1-2102490.zip) Discussion on NR Rel-16 UE Features ZTE

[R1-2102557](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_104b%5CDocs%5CR1-2102557.zip) Discussion on NR Rel-16 UE Features OPPO

[R1-2102950](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_104b%5CDocs%5CR1-2102950.zip) Remaining issues on Rel-16 eMIMO UE features. vivo

[R1-2103087](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_104b%5CDocs%5CR1-2103087.zip) Discussions on NR Rel-16 UE features Apple

[R1-2103148](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_104b%5CDocs%5CR1-2103148.zip) Discussion on NR Rel-16 UE features Qualcomm Incorporated

[R1-2103197](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_104b%5CDocs%5CR1-2103197.zip) Remaining issues on NR Rel-16 UE features Nokia, Nokia Shanghai Bell

[R1-2103399](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_104b%5CDocs%5CR1-2103399.zip) Remaining details of Rel-16 NR UE features Huawei, HiSilicon

[R1-2103662](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_104b%5CDocs%5CR1-2103662.zip) Remaining details of Rel-16 NR UE features Ericsson