**3GPP TSG RAN WG1 #110 R1-2208118**

**Toulouse, France, August 22nd – 26th, 2022**

Source: NTT DOCOMO, INC.

Title: Session Notes for R17 UE Features 1

Agenda Item: 8.16

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

***8.16 Rel-17 UE features***

[110-R17-UE\_features\_1] To be used for sharing updates on online/offline schedule, details on what is to be discussed in online/offline sessions, tdoc number of the moderator summary for online session, etc – Hiroki (DOCOMO)

* eIIoT & URLLC, RedCap, UE power saving, coverage enhancement, NB-IoT & eMTC, sidelink, MBS, 5G terrestrial broadcast, UL TX switching, SDT

[110-R17-UE\_features\_2] To be used for sharing updates on online/offline schedule, details on what is to be discussed in online/offline sessions, tdoc number of the moderator summary for online session, etc – Ralf (AT&T)

* NR-MIMO, NR from 52.6GHz to 71 GHz, NR-NTN, positioning, eIAB, DSS, IoT over NTN, 1024QAM

**8.16.1 UE features for enhanced IIoT and and URLLC**

**R1-2207701** Summary on UE features for enhanced IIoT and URLLC Moderator (NTT DOCOMO, INC.)

Agreement:

* Apply following proposals in R1-2207701.
  + 2-1-2
  + 2-2-3
  + 2-3-1
  + 2-3-2
  + 2-3-3
  + 2-3-4
  + 2-3-7
  + 2-5-1
  + 2-6-1
  + 2-8
  + 2-9-2
  + 2-9-5 to remove “conveying UL-SCH” from the components 6 and 7 for FG 25-16
  + 2-10-1
  + 2-11-1
  + 2-11-8
  + 2-1-1

**R1-2207936** Summary#2 on UE features for enhanced IIoT and URLLC Moderator (NTT DOCOMO, INC.)

Agreements:

* Apply following proposals in R1-2207936.
  + 2-2-1
  + 2-2-2
  + 2-3-6
  + 2-4
  + 2-5-2
  + 2-6-2 for TN/licensed, with having additional per-band FG for NTN and for unlicensed

**R1-2208114** Summary#3 on UE features for enhanced IIoT and URLLC Moderator (NTT DOCOMO, INC.)

Proposal:

* Apply following proposals in R1-2208114.
  + 2-9-4
  + 2-11-3
  + 2-11-4
  + 2-11-5
  + 2-11-9 [for TN/licensed, with having additional per-band FG for NTN and for unlicensed]
  + 2-2-4
  + 2-2-5
  + 2-3-5
  + 2-3-8
  + 2-5-3
  + 2-5-4
  + 2-7
  + 2-9-1 (wait for AI 8.3)
  + 2-9-3
  + 2-10-2
  + 2-11-2
  + 2-11-6
  + 2-11-7

[R1-2205784](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205784.zip) Rel-17 UE features for enhanced IIoT/URLLC Huawei, HiSilicon

[R1-2205956](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205956.zip) Discussion on UE features for enhanced IIoT and URLLC ZTE

[R1-2206307](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206307.zip) Discussion on UE features for IIoT and URLLC OPPO

[R1-2206766](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206766.zip) Discussion on UE features for IIoT and URLLC vivo

[R1-2207210](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207210.zip) UE features for enhanced IIOT and URLLC Qualcomm Incorporated

[R1-2207388](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207388.zip) Discussion on Rel.17 UE features for enhanced IIoT/URLLC NTT DOCOMO, INC.

[R1-2207581](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207581.zip) On UE features for enhanced IIoT and URLLC Nokia, Nokia Shanghai Bell

**8.16.2 UE features for NR coverage enhancement**

**R1-2207702** Summary on UE features for NR coverage enhancement Moderator (NTT DOCOMO, INC.)

Agreement:

* Apply following proposals in R1-2207702.
  + 2-2-1
  + 2-3-8
  + 2-3-10
  + 2-3-13
  + 2-3-14
  + 2-3-16
  + 2-3-21
  + 2-5-1
  + 2-1-1
  + 2-1-2
  + 2-1-3
  + 2-2-2
  + 2-2-3
  + 2-2-4 with adding “without repetition”

**R1-2207937** Summary#2 on UE features for NR coverage enhancement Moderator (NTT DOCOMO, INC.)

Agreement:

* Apply following proposals in R1-2207937.
  + 2-3-1 with removing “, as defined in TS 38.101-1 & 38.101-2”
  + 2-3-9
  + 2-3-11
  + 2-3-12
  + 2-3-15

**R1-2208115** Summary#3 on UE features for NR coverage enhancement Moderator (NTT DOCOMO, INC.)

Proposal:

* Apply following proposals in R1-2208115.
  + 2-3-2 (wait for AI 8.8)
  + 2-3-3
  + 2-3-4
  + 2-3-5
  + 2-3-7 (wait for AI 8.8)
  + 2-3-17
  + 2-3-18 (wait for AI 8.8)
  + 2-3-19 (wait for AI 8.8)
  + 2-3-20 (wait for AI 8.8)
  + 2-3-24 (wait for AI 8.8)
  + 2-4-1

[R1-2205778](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205778.zip) Rel-17 UE features for NR coverage enhancement Huawei, HiSilicon

[R1-2205957](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205957.zip) Discussion on UE features for NR coverage enhancement ZTE

[R1-2206566](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206566.zip) Discussion on UE features for NR coverage enhancement Intel Corporation

[R1-2206612](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206612.zip) Discussion on UE features for NR coverage enhancement Xiaomi

[R1-2206685](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206685.zip) Remaining issues on UE features for Rel-17 NR coverage enhancements China Telecom

[R1-2206767](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206767.zip) Remaining issues on UE features for NR coverage enhancement vivo

[R1-2206808](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206808.zip) UE features for NR coverage enhancement Samsung

[R1-2206892](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206892.zip) Maintenance on Rel.17 UE features for NR coverage enhancement CMCC

[R1-2207017](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207017.zip) Discussion on UE features for NR Coverage Enhancement MediaTek Inc.

[R1-2207162](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207162.zip) UE Features for NR Coverage Enhancement Ericsson

[R1-2207211](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207211.zip) UE features for NR coverage enhancement Qualcomm Incorporated

[R1-2207316](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207316.zip) On Rel-17 NR coverage enhancement UE Features Apple

[R1-2207389](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207389.zip) Discussion on remaining issues in RAN1 UE features for NR coverage enhancement NTT DOCOMO, INC.

[R1-2207582](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207582.zip) On UE features for NR coverage enhancement Nokia, Nokia Shanghai Bell

**8.16.3 UE features for NR sidelink enhancement**

**R1-2207703** Summary on UE features for NR sidelink enhancement Moderator (NTT DOCOMO, INC.)

Agreement:

* Apply following proposals in R1-2207703.
  + 2-1

**R1-2207938** Summary#2 on UE features for NR sidelink enhancement Moderator (NTT DOCOMO, INC.)

Proposal:

* Apply following proposals in R1-2207938.
  + 2-2-1
  + 2-2-2
  + 2-2-3
  + 2-6
  + 2-8-1
  + 2-3-1
  + 2-3-2
  + 2-4
  + 2-5-1
  + 2-5-2
  + 2-7

[R1-2205767](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205767.zip) Remaining issues on UE feature for sidelink Huawei, HiSilicon

[R1-2205849](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205849.zip) Discussion on UE features for NR sidelink enhancement LG Electronics

[R1-2206156](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206156.zip) On UE features for NR sidelink enhancement ZTE,Sanechips

[R1-2206284](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206284.zip) On UE feature list for NR sidelink enhancement OPPO

[R1-2206335](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206335.zip) On the pre-requisites for Rel-17 SL feature groups FUTUREWEI

[R1-2206373](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206373.zip) Remaining issues on Rel-17 UE features for sidelink enhancements CATT, GOHIGH

[R1-2206768](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206768.zip) Remaining issues on UE features for NR sidelink enhancement vivo

[R1-2207212](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207212.zip) UE features for NR sidelink enhancements Qualcomm Incorporated

[R1-2207317](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207317.zip) On Rel-17 NR Sidelink UE Features Apple

[R1-2207390](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207390.zip) Discussion on Rel.17 UE features for NR sidelink enhancement NTT DOCOMO, INC.

[R1-2207564](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207564.zip) UE features for NR sidelink enhancements Ericsson

**8.16.4 UE features for NR MBS**

**R1-2207704** Summary on UE features for NR MBS Moderator (NTT DOCOMO, INC.)

Agreement:

* Apply following proposals in R1-2207704.
  + 2-4-1
  + 2-4-2
  + 2-5-2
  + 2-6-1
  + 2-6-2
  + 2-8-3
  + 2-11-2
  + 2-3-1
  + 2-5-1 with update “on the same cell ~~same~~ as multicast initial transmission”
  + 2-8-1 with FFS on maximum modulation order for broadcast PDSCH

Conclusion:

A per-UE FG is applicable to PCell and SCell unless stated.

**R1-2207939** Summary#2 on UE features for NR MBS Moderator (NTT DOCOMO, INC.)

Agreement:

* Apply following proposals in R1-2207939.
  + 2-9-1 per-UE with FDD/TDD/FR1/FR2 differentiation for TN/licensed, with having additional per-band FG for NTN and for unlicensed
  + 2-13-1 not in Component but in Note
  + 2-13-2

**R1-2208116** Summary#3 on UE features for NR MBS Moderator (NTT DOCOMO, INC.)

Proposal:

* Apply following proposals in R1-2208116.
  + 2-12-1
  + 2-14-1
  + 2-15-2
  + 2-16-1
  + 2-16-2
  + 2-17-1
  + 2-17-2
  + 2-18-1
  + 2-18-3
  + 2-19-1
  + 2-20-1
  + 2-20-2
  + 2-21-1
  + 2-21-2
  + 2-23-1
  + 2-24-1
  + 2-24-3
  + 2-25-2
  + 2-26-2
  + 2-27-2
  + 2-28-1
  + 2-31-1
  + 2-31-3
  + 2-1-1 (updated)
  + 2-1-2
  + 2-2-1/2-10-2
  + 2-3-2
  + 2-7-1/2-7-2/2-7-3
  + 2-8-2
  + 2-10-1 (wait for AI 8.12)
  + 2-11-1
  + 2-11-3
  + 2-12-2
  + 2-12-3
  + 2-12-4
  + 2-12-5
  + 2-13-3
  + 2-14-2
  + 2-14-3
  + 2-15-1
  + 2-18-2
  + 2-22-1
  + 2-23-2
  + 2-24-2
  + 2-25-1
  + 2-25-3
  + 2-26-1
  + 2-26-3
  + 2-27-3
  + 2-27-4
  + 2-28-2
  + 2-28-3
  + 2-29-1
  + 2-30-1
  + 2-31-2
  + 2-32-1
  + 2-32-2

[R1-2205758](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205758.zip) Rel-17 UE features for NR MBS Huawei, HiSilicon

[R1-2205958](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205958.zip) Discussion on Rel-17 UE features for NR MBS ZTE

[R1-2205979](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205979.zip) UE features for R17 NR MBS Spreadtrum Communications

[R1-2206286](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206286.zip) Discussion on UE features for NR MBS OPPO

[R1-2206613](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206613.zip) Discussion on UE features for NR MBS Xiaomi

[R1-2206769](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206769.zip) UE features for NR MBS vivo

[R1-2207014](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207014.zip) Views on UE features for NR MBS MediaTek Inc.

[R1-2207213](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207213.zip) UE features for Rel-17 NR MBS Qualcomm Incorporated

[R1-2207318](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207318.zip) On Rel-17 NR MBS UE Features Apple

[R1-2207391](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207391.zip) Discussion on Rel.17 UE features for NR MBS NTT DOCOMO, INC.

[R1-2207583](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207583.zip) On UE features for NR MBS Nokia, Nokia Shanghai Bell

[R1-2207617](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207617.zip) Views on NR MBS UE features Ericsson

**8.16.5 Others**

*For discussion on UE features for any other Rel-17 work items.*

**R1-2207705** Summary on UE features for NR RedCap Moderator (NTT DOCOMO, INC.)

Agreement:

* Apply the following for Component 5 of FG28-1
  + Remove FFS and keep “For separate initial DL BWP used for paging, CD-SSB is included”
  + Add following sentence
    - “For separate initial DL BWP used in connected mode as BWP#0 configuration option 1, CD-SSB is included”

**R1-2208117** Summary#2 on UE features for NR RedCap Moderator (NTT DOCOMO, INC.)

Proposal:

* Remove “FFS whether to add any other basic features for RedCap UE” and apply one of the following alternatives for potential additional component of FG28-1
  + Alt.1: Add following components
    - “For FR1, support one PDCCH CORESET per BWP per cell in addition to CORESET#0 if the BWP contains CORESET#0, otherwise, support two PDCCH CORESETs per BWP per cell”
    - “For FR2, support two PDCCH CORESETs per BWP per cell in addition to CORESET#0 if the BWP contains CORESET#0, otherwise, support three PDCCH CORESETs per BWP per cell”
  + Alt.2: No additional component

Proposal:

* Remove “FFS whether to add additional components” and apply one of the following alternatives for potential additional component of FG28-1a
  + Alt.1: Add following components [and add FG6-1a as prerequisite FG]
    - “For BWP#0 configuration option 1, in RRC connected mode, support operation in a separate initial DL BWP that does not include CD-SSB”
    - “Measurement of SSB outside the RRC-configured DL BWP for RLM/RRM and BM/BFD (if supported)”
  + Alt.2: Add following component
    - CSI-RS based RLM (and add FG1-7 as prerequisite FG)
  + Alt.3: No additional component

**R1-2207706** Summary on UE features for UE power saving enhancements Moderator (NTT DOCOMO, INC.)

Agreement:

Remove the bracket in Note for FG 29-3b/c/d, i.e., “according to Table 10.4-1 of 38.213” is kept

**R1-2207707** Summary on UE features for NB-IoT and LTE-MTC enhancements Moderator (NTT DOCOMO, INC.)

Proposal:

Change the type of FG1-2 from “per-UE” to “per-band”

**R1-2207708** Summary on UE features for TEI17 Moderator (NTT DOCOMO, INC.)

Agreement:

Introduce a new FG for Parallel MsgA and SRS/PUCCH/PUSCH transmissions across CCs in intra-band non-contiguous CA as below

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 39. TEI17 | 39-X | Parallel MsgA and SRS/PUCCH/PUSCH transmissions across CCs in intra-band non-contiguous CA | Parallel MsgA and SRS/PUCCH/PUSCH transmissions across CCs in intra-band non-contiguous CA | 9-3 | Yes | n/a | UE cannot transmit parallel MsgA and SRS/PUCCH/PUSCH transmissions across CCs in intra-band non-contiguous CA | Per BC | No | Yes | n/a | This feature is the same as *parallelTxMsgA-SRS-PUCCH-PUSCH-r16*, but for intra-band non-contiguous CA. | Optional with capability signaling |

[R1-2205787](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205787.zip) On UE features for other Rel-17 work items Huawei, HiSilicon

[R1-2205914](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205914.zip) Discussion on some remaining issues of Rel-17 UE features ZTE

[R1-2206567](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206567.zip) Discussion on remaining issues for Rel-17 UE capability Intel Corporation

[R1-2206770](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206770.zip) Other remaining issues for Rel-17 UE features (RedCap, B52.6GHz) vivo

[R1-2206809](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206809.zip) Views on UE features for Rel-17 NR FeMIMO Samsung

[R1-2206856](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206856.zip) Discussion on UE features for NTN-IoT OPPO

[R1-2206893](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206893.zip) Discussion on UE features for RedCap CMCC

[R1-2207001](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207001.zip) Remaining issues on R17 UE features MediaTek Inc.

[R1-2207035](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207035.zip) Discussion on UE features for NR above 52.6 GHz LG Electronics

[R1-2207214](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207214.zip) Other Rel-17 UE features Qualcomm Incorporated

[R1-2207319](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207319.zip) View on Rel-17 UE features Apple

[R1-2207392](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207392.zip) Discussion on remaining issues in RAN1 UE features list for Rel-17 NR NTT DOCOMO, INC.

[R1-2207576](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207576.zip) UE features on Rel-17 Work Items under Agenda Item "Others" Ericsson

[R1-2207584](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207584.zip) On UE features for miscellaneous topics Nokia, Nokia Shanghai Bell