**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.)

Agreements:

* Apply following proposals in R1-2208114.
	+ 2-9-4: as per band
	+ 2-11-2: as per FS
	+ 2-11-4: as per FS
	+ 2-11-9 for TN/licensed, with having additional per-band FG for NTN and for unlicensed
	+ 2-11-3
	+ 2-9-1: with removing component 2
	+ 2-11-5

[R1-2205784](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2205784.zip) Rel-17 UE features for enhanced IIoT/URLLC Huawei, HiSilicon

[R1-2205956](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2205956.zip) Discussion on UE features for enhanced IIoT and URLLC ZTE

[R1-2206307](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206307.zip) Discussion on UE features for IIoT and URLLC OPPO

[R1-2206766](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206766.zip) Discussion on UE features for IIoT and URLLC vivo

[R1-2207210](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207210.zip) UE features for enhanced IIOT and URLLC Qualcomm Incorporated

[R1-2207388](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207388.zip) Discussion on Rel.17 UE features for enhanced IIoT/URLLC NTT DOCOMO, INC.

[R1-2207581](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207581.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.)

Agreement:

* Apply following proposals in R1-2208115.
	+ 2-3-17 with option 1
	+ 2-4-1 with “4-23 or 25-2”

[R1-2205778](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2205778.zip) Rel-17 UE features for NR coverage enhancement Huawei, HiSilicon

[R1-2205957](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2205957.zip) Discussion on UE features for NR coverage enhancement ZTE

[R1-2206566](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206566.zip) Discussion on UE features for NR coverage enhancement Intel Corporation

[R1-2206612](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206612.zip) Discussion on UE features for NR coverage enhancement Xiaomi

[R1-2206685](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206685.zip) Remaining issues on UE features for Rel-17 NR coverage enhancements China Telecom

[R1-2206767](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206767.zip) Remaining issues on UE features for NR coverage enhancement vivo

[R1-2206808](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206808.zip) UE features for NR coverage enhancement Samsung

[R1-2206892](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206892.zip) Maintenance on Rel.17 UE features for NR coverage enhancement CMCC

[R1-2207017](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207017.zip) Discussion on UE features for NR Coverage Enhancement MediaTek Inc.

[R1-2207162](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207162.zip) UE Features for NR Coverage Enhancement Ericsson

[R1-2207211](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207211.zip) UE features for NR coverage enhancement Qualcomm Incorporated

[R1-2207316](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207316.zip) On Rel-17 NR coverage enhancement UE Features Apple

[R1-2207389](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207389.zip) Discussion on remaining issues in RAN1 UE features for NR coverage enhancement NTT DOCOMO, INC.

[R1-2207582](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207582.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.)

Agreement:

* Apply “one of {15-4, 32-2b, 32-4b}” as prerequisite FG for following FGs with removing yellow highlighted parts in prerequisite FGs
	+ 32-4/4a
	+ 32-5a-1/2/3
	+ 32-5b-1/2
* Note: LTE UE features list will also be updated accordingly

Agreement:

* No prerequisite FG for 32-2b
* Update component 2 of 32-2b as “UE supports synchronization to a reference UE”
* Update component 6 of 32-4b as “UE supports synchronization to a reference UE if it supports 15-1.”

[R1-2205767](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2205767.zip) Remaining issues on UE feature for sidelink Huawei, HiSilicon

[R1-2205849](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2205849.zip) Discussion on UE features for NR sidelink enhancement LG Electronics

[R1-2206156](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206156.zip) On UE features for NR sidelink enhancement ZTE,Sanechips

[R1-2206284](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206284.zip) On UE feature list for NR sidelink enhancement OPPO

[R1-2206335](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206335.zip) On the pre-requisites for Rel-17 SL feature groups FUTUREWEI

[R1-2206373](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206373.zip) Remaining issues on Rel-17 UE features for sidelink enhancements CATT, GOHIGH

[R1-2206768](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206768.zip) Remaining issues on UE features for NR sidelink enhancement vivo

[R1-2207212](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207212.zip) UE features for NR sidelink enhancements Qualcomm Incorporated

[R1-2207317](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207317.zip) On Rel-17 NR Sidelink UE Features Apple

[R1-2207390](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207390.zip) Discussion on Rel.17 UE features for NR sidelink enhancement NTT DOCOMO, INC.

[R1-2207564](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207564.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.)

Agreement:

* Apply following proposals in R1-2208116.
	+ 2-8-2 as “per-band” and add a new per-FSPC FG for maximum modulation order used for maximum data rate calculation
		- Components of the new FG
			* 1. For FR1, up to 1024QAM is supported as maximum modulation order used for maximum data rate calculation, candidate values {256QAM, 1024QAM}
			* 2. For FR2, up to 256QAM is supported as maximum modulation order used for maximum data rate calculation, candidate values {64QAM, 256QAM}

[R1-2205758](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2205758.zip) Rel-17 UE features for NR MBS Huawei, HiSilicon

[R1-2205958](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2205958.zip) Discussion on Rel-17 UE features for NR MBS ZTE

[R1-2205979](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2205979.zip) UE features for R17 NR MBS Spreadtrum Communications

[R1-2206286](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206286.zip) Discussion on UE features for NR MBS OPPO

[R1-2206613](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206613.zip) Discussion on UE features for NR MBS Xiaomi

[R1-2206769](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206769.zip) UE features for NR MBS vivo

[R1-2207014](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207014.zip) Views on UE features for NR MBS MediaTek Inc.

[R1-2207213](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207213.zip) UE features for Rel-17 NR MBS Qualcomm Incorporated

[R1-2207318](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207318.zip) On Rel-17 NR MBS UE Features Apple

[R1-2207391](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207391.zip) Discussion on Rel.17 UE features for NR MBS NTT DOCOMO, INC.

[R1-2207583](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207583.zip) On UE features for NR MBS Nokia, Nokia Shanghai Bell

[R1-2207617](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207617.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.)

Conclusion:

FFSs for FG 28-1/1a regarding any additional components are to be removed.

**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.)

Agreement:

Change the type of FG1-2 from “per-UE” to “per-band” according to RAN4 LS

**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%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2205787.zip) On UE features for other Rel-17 work items Huawei, HiSilicon

[R1-2205914](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2205914.zip) Discussion on some remaining issues of Rel-17 UE features ZTE

[R1-2206567](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206567.zip) Discussion on remaining issues for Rel-17 UE capability Intel Corporation

[R1-2206770](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206770.zip) Other remaining issues for Rel-17 UE features (RedCap, B52.6GHz) vivo

[R1-2206809](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206809.zip) Views on UE features for Rel-17 NR FeMIMO Samsung

[R1-2206856](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206856.zip) Discussion on UE features for NTN-IoT OPPO

[R1-2206893](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2206893.zip) Discussion on UE features for RedCap CMCC

[R1-2207001](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207001.zip) Remaining issues on R17 UE features MediaTek Inc.

[R1-2207035](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207035.zip) Discussion on UE features for NR above 52.6 GHz LG Electronics

[R1-2207214](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207214.zip) Other Rel-17 UE features Qualcomm Incorporated

[R1-2207319](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207319.zip) View on Rel-17 UE features Apple

[R1-2207392](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207392.zip) Discussion on remaining issues in RAN1 UE features list for Rel-17 NR NTT DOCOMO, INC.

[R1-2207576](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207576.zip) UE features on Rel-17 Work Items under Agenda Item "Others" Ericsson

[R1-2207584](file:///C%3A%5CUsers%5Cyounsun%5CDocuments%5C3GPP%20documents%5CRAN1%20tdocs%5CTSGR1_110%5CDocs%5CR1-2207584.zip) On UE features for miscellaneous topics Nokia, Nokia Shanghai Bell