**3GPP TSG RAN WG1 #122 R1-250XXXX**

**Bengaluru, India, Aug 25th – 29th, 2025**

Agenda Item: 10.1

Source: Ad-Hoc Chair (Ericsson)

Title: Session notes for 10.1 Artificial Intelligence (AI)/Machine Learning (ML) for NR air interface enhancements

Document for: Discussion, Decision

## Artificial Intelligence (AI)/Machine Learning (ML) for NR air interface enhancements

*Please refer to RP-251870 for detailed scope of the WI.*

[122-R20-AI/ML] Email discussion on Rel-20 AI/ML – xxx

* 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

**R1-2506206** Work plan for NR\_AIML\_air\_Ph2 Qualcomm Incorporated

Proposed conclusion:

Companies are encouraged to consider the following guidelines for discussions and preparation of contributions:

**Target CSI:**

* Target CSI type is about what to report, e.g., channel or precoder, antenna-port-subband representation or angular-delay representation. It will be mainly discussed in 10.1.1.1.
* Target CSI format is a method to quantize the target CSI. Target CSI in such format will be delivered from UE to NW in data collection / monitoring or exchanged from NW to UE for inter-vendor collaboration. The former will be discussed in 10.1.1.2. The latter will be discussed in 10.1.2 and may leverage the discussion in 10.1.1.2 if applicable.

**Pairing ID:**

* Pairing ID will be used in dataset exchange, applicability enquiry / model pairing, data collection, inference configuration. It can be discussed in all three agendas whenever necessary / applicable. The three agendas will try to leverage the discussion results each other.

**Quantization method / codebook:**

* Quantization method such as SQ or VQ, number of quantization bits, etc, will be discussed in 10.1.1.1. The necessity of adopting exchanged codebook can be discussed in both 10.1.1.1 and 10.1.2, while the codebook exchange will be discussed in 10.1.2. Other details, such as common or specific codebooks are needed for different configuration, can be discussed in these two agendas whenever necessary / applicable. The two agendas will try to leverage the discussion results each other.

### CSI spatial/frequency compression without temporal aspects (“Case 0”)

R1-2506375 Enhancements for Case-0 CSI Compression in Rel-20 Rakuten Mobile, Inc

#### 10.1.1.1 Inference related aspects

*Including target CSI type, measurement and report configuration, CQI RI determination, payload determination, quantization configuration codebook, UCI mapping, CSI processing criteria and timeline, priority rules for CSI reports.*

**R1-2505148** Discussion on inference related aspects for CSI spatial/frequency compression without temporal aspects (“Case 0”) FUTUREWEI

**R1-2505239** AI/ML CSI Spatial/Frequency Compression: Inference Aspects InterDigital, Inc.

R1-2505133 Inference related aspects of AI/ML for CSI compression Ericsson

R1-2505161 Discussion on AIML for CSI compression inference related aspects Spreadtrum, UNISOC

R1-2505199 Inference related aspects for CSI compression Huawei, HiSilicon

R1-2505260 Inference for AI/ML based CSI Compression Google

R1-2505299 Specification support on inference related aspects of AI/ML-based CSI compression CATT

R1-2505405 Discussion on inference related aspects for CSI compression vivo

R1-2505452 Discussion on inference related aspects of two-sided AI/ML model based CSI feedback Xiaomi

R1-2505477 Discussion on interference related aspects for CSI compression TCL

R1-2505491 Discussion on inference related aspects of CSI compression ZTE Corporation, Sanechips

R1-2505573 Views on inference related aspects of CSI compression Samsung

R1-2505617 Discussion on inference related aspects for CSI compression KT Corp.

R1-2505670 Discussion on Inference related aspects for AI CSI compression Ofinno

R1-2505687 Inference related aspects for CSI compression Lenovo

R1-2505699 Discussion on inference aspects for AI/ML-based CSI compression Panasonic

R1-2505746 Inference related aspects for AI/ML CSI compression OPPO

R1-2505802 CSI Compression: Inference Related Aspects Nokia

R1-2505819 Discussion on inference related aspects for CSI compression LG Electronics

R1-2505902 On inference related aspects for AI based CSI spatial/frequency domain compression Apple

R1-2505935 Discussion on inference aspects of CSI compression NEC

R1-2505944 Discussions on Inference Related Aspects for CSI Compression Sharp

R1-2505945 Discussion on inference of AI/ML CSI compression Transsion Holdings

R1-2505962 Discussion on inference related aspects in CSI compression with AI/ML Fujitsu

R1-2506029 CSI spatial/frequency compression without temporal aspects (“Case 0”)- Inference related aspects MediaTek Inc.

R1-2506057 Discussion on inference related aspects of CSI compression ETRI

R1-2506088 Discussion on inference related aspects of CSI compression CMCC

R1-2506122 Discussion on inference aspects of CSI compression KAIST

R1-2506149 Discussion on Inference related aspects for AI/ML based CSI compression ITL

R1-2506207 Specification of inference aspects of AIML CSI compression Qualcomm Incorporated

R1-2506294 Discussion on the inference-related aspects of AI/ML CSI compression NTT DOCOMO, INC.

R1-2506353 Discussion on AI/ML CSI Compression inference aspects CEWiT

R1-2506377 Discussion on Inference-Related Aspects of Case-0 CSI Compression Rakuten Mobile, Inc

#### 10.1.1.2 Other aspects

*Including NW and UE data collection for training, performance monitoring, as well as model pairing related issues.*

**R1-2505700** Discussion on other aspects for AI/ML-based CSI compression Panasonic

**R1-2505574** Views on other aspects of CSI compression Samsung

R1-2505134 Other aspects of AI/ML for CSI compression Ericsson

R1-2505149 Discussion on other aspects for CSI spatial/frequency compression without temporal aspects (“Case 0”) FUTUREWEI

R1-2505162 Discussion on AIML for CSI compression other aspects Spreadtrum, UNISOC

R1-2505200 Other aspects for CSI compression Huawei, HiSilicon

R1-2505240 AI/ML CSI Spatial/Frequency Compression: Other Aspects InterDigital, Inc.

R1-2505261 Other Aspects for AI/ML based CSI Compression Google

R1-2505300 Specification support on other aspects of AI/ML-based CSI compression CATT

R1-2505406 Discussion on other aspects for CSI compression vivo

R1-2505453 Discussion on other aspects of CSI spatial/frequency compression Xiaomi

R1-2505478 Discussion on other aspects for CSI compression TCL

R1-2505492 Discussion on other aspects of CSI compression ZTE Corporation, Sanechips

R1-2505685 Other aspects Tejas Network Limited

R1-2505688 Other aspects for CSI compression Lenovo

R1-2505747 Other aspects for AI/ML CSI compression OPPO

R1-2505803 CSI Compression: Other Aspects Nokia

R1-2505820 Discussion on other aspects for CSI compression LG Electronics

R1-2505903 On other aspects for AI based CSI spatial/frequency domain compression Apple

R1-2505930 Discussion on other aspects of CSI compression NEC

R1-2505963 Discussion on other aspects of CSI compression Fujitsu

R1-2506030 CSI spatial/frequency compression without temporal aspects (“Case 0”)- Other aspects MediaTek Inc.

R1-2506058 Discussion on other aspects of CSI compression ETRI

R1-2506089 Discussion on other aspects of CSI compression CMCC

R1-2506108 Discussions on Performance Monitoring for AI/ML CSI Compression Sony

 Withdrawn

R1-2506208 Specification of other aspects of AIML CSI compression Qualcomm Incorporated

R1-2506249 Discussions on other aspects for NR air interface enhancements Sharp

R1-2506295 Discussion on other aspects of AI/ML CSI compression NTT DOCOMO, INC.

R1-2506315 Other Aspects of CSI spatial/frequency compression Indian Institute of Tech (M)

R1-2506339 Discussion on AIML based CSI compression ASUSTeK

R1-2506354 Discussion on AI/ML CSI Compression other aspects CEWiT

R1-2506378 Discussion on Data-collection / Monitoring / Model-pairing Rakuten Mobile, Inc

R1-2506386 Other aspects for CSI compression IIT Kanpur

### Inter-vendor training collaboration for two-sided AI/ML models

*Including specification of standardized dataset format/content plus dataset exchange (“Direction A, sub-option 4-1”), as well as RAN4-triggered issues.*

R1-2505964 Discussion on inter-vendor training collaboration for two-sided AI/ML models Fujitsu

R1-2506090 Discussion on inter-vendor training collaboration for CSI compression CMCC

R1-2505135 Inter-vendor training collaboration for two-sided AI/ML models Ericsson

R1-2505150 Discussion on inter-vendor training collaboration for two-sided AI/ML models FUTUREWEI

R1-2505163 Discussion on Inter-vendor training collaboration for two-sided AI/ML models Spreadtrum, UNISOC

R1-2505201 Inter-vendor training collaboration for two-sided AI/ML models Huawei, HiSilicon

R1-2505241 AI/ML CSI Spatial/Frequency Compression: Inter-vendor Collaboration InterDigital, Inc.

R1-2505262 Inter-Vendor Collaboration for AI/ML based CSI Compression Google

R1-2505301 Discussion on Inter-vendor training collaboration for CSI compression CATT

R1-2505407 Discussion on inter-vendor training collaboration for two-sided AI/ML models vivo

R1-2505454 Discussion on inter-vendor training collaboration for two-sided AI/ML models Xiaomi

R1-2505479 Discussion on inter-vendor collaboration for CSI compression TCL

R1-2505493 Discussion on inter-vendor training collaboration for two-sided AI/ML models ZTE Corporation, Sanechips

R1-2505575 Views on inter-vendor training collaboration for two-sided AI/ML models Samsung

R1-2505642 Discussion on Inter-vendor Training Collaboration for AI/ML models NEC

R1-2505689 Inter-vendor training collaboration for two-sided AI/ML models Lenovo

R1-2505701 Discussion on inter-vendor training collaboration for two-sided AI/ML models Panasonic

R1-2505748 Inter-vendor training collaboration for AI/ML CSI compression OPPO

R1-2505804 Inter-vendor training collaboration for two-sided AI/ML models Nokia

R1-2505806 Reference Model for Data Generation NTU

R1-2505821 Discussion on Inter-vendor training collaboration for two-sided models LG Electronics

R1-2505904 Inter-vendor training collaboration for two sided AI/ML models Apple

R1-2506012 Discussions on Inter-vendor training collaboration Sharp

R1-2506031 Inter-vendor training collaboration for two-sided AI/ML models MediaTek Inc.

R1-2506059 Discussion on inter vendor training collaboration for two-sided AI/ML models ETRI

R1-2506109 Discussion on Inter-Vendor Training collaboration for Two-Side AI/ML Models Sony

R1-2506209 Inter-vendor training collaboration for two-sided CSI compression use case Qualcomm Incorporated

R1-2506296 Discussion on the inter-vendor training collaborations for two-sided AI/ML models NTT DOCOMO, INC.