**3GPP TSG-RAN WG2 Meeting #127bis R2-24xxxxx**

**Hefei, China, Oct 14th~ Oct 18th, 2024**

Agenda Item: 8.3.2

Source: Mediatek Inc.

Title: [AT127bis][016][AI Mob] Simulation table example (Mediatek)

Document for: Discussion, Decision

# Introduction

This report provides a summary for the following at-meeting email discussion:

* [AT127bis][016][AI Mob] Simulation table example (Mediatek)

 Intended outcome: provide simulation table example and get comments/questions

 Deadline: 10-17-24

As we may have a CB on AI mobility from 14:30 to 16:30 on Thursday (10/17), the deadline for providing comments is 12:00 on Thursday.

Companies providing input to this email discussion are requested to leave contact information below.

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| --- | --- | --- |
| **Company** | **Name** | **Email Address** |
| ZTE | Song Xiaohui | song.xiaohui@zte.com.cn |
| OPPO | Zhongda Du | duzhongda@oppo.com |
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# Discussion

The offline discussion will collect companies' comments and suggestions on the example spreadsheets based on current agreements. Any further discussion beyond what has been agreed upon is not within the scope of this discussion.

Please notice the following revisions on the template:

1. New columns have been added according to the newly reached agreements, with the content written in red.
2. An example row has been added to define the format of each table's content.

## Scenario 2

Please provide comments on the spreadsheet example for Scenario 2: RRM Measurement Prediction Evaluation results for caseB in the table below.

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| --- | --- |
| Company | Comment/suggestion |
| ZTE | Regarding performance metrics:1. Based on the agreement, companies can provide multiple real time RSRP value(s), an example is needed for this case. For example, how to show multiple values, whether companies also need to fill in the column ‘Last predicted point L3 cell RSRP difference’?
2. The name ‘Last predicted point L3 cell RSRP difference’ is unclear. Actually, it is also an average value, to average all last predicted point in the prediction window. We can use ‘Average RSRP difference for last predicted point within prediction window’
3. For non-AI, considering it is optional for companies to report, maybe we can mark it as optional.

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| **Performance Metrics** |
| **Average L3 cell RSRP difference (dB)** | **Average RSRP difference for last predicted point within prediction window**  | **Average L3 cell RSRP difference(non-AI/simple AI) (dB) (optional)** | **Average RSRP difference for last predicted point within prediction window (non-AI/simple AI) (dB) (optional)**  |
| **XX** | **XX** | **(non-AI/simple AI) Method: XX** | **(non-AI/simple AI) Method:XX** |
| 0.198 | 　 | (non-AI) Sample and hold: 0.198 | 　 |

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| OPPO | 1. It is not clear what coarse update in “Spatial consistency” is. We do not have any discussion about it and it can be company implementation. Purely choice between A and B is good enough. Same comment to other scenarios.2. The template for “user earlier predicted results as input or not” should be “NO” rather than “No” according to what is highlighted in row 3.3. For non-AI and simple AI methods, the current agreement is that companies are free to report. Now, it seems to be mandatory. Companies may have different methods and even for sample and hold there could be different implementations. It could be hard for us to get some common observations from those not aligned methods. Therefore, we think it is premature to include them in spreadsheets. The comment also applies to other scenarios. |
| Huawei | Most comments are common for all scenarios:1. Agree with OPPO there is no need to have specific “performance metrics” for non-AIML. These results can be provided separately, i.e. by indicating that the model used was a non-AIML model. Otherwise, we will have to indicate two models in one row which will make it messy. The comparison between AIML and non-AIML can be done by companies in their Tdocs. Also, we should stop using “simple” AIML model term. Whether a model is simple or not can be determined based on its parameters (size, FLOPs etc.).
2. For L1 filtering another option is that there is no L1 filtering, so it should be: “(none/sliding/non-sliding)”
3. For the detailed pattern, it is not clear to me what, e.g. “2” means – should we have some examples?
4. Training/testing data size – it should be clarified what this means. I think we refer to number of samples, so it should be made clear.
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## Scenario 4

Please provide comments on the spreadsheet example for Scenario 4: RRM Measurement Prediction Evaluation results for caseA.

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| Company | Comment/suggestion |
| ZTE | Same as comment above |
| OPPO | It is better to remove “1 cell, L3 cell level RSRP ~~in OW~~” in “Model input” and “Model output” to align examples among all scenarios. |
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## Scenario 3

Please provide comments on the spreadsheet example for Scenario 3: RRM Measurement Prediction Evaluation results for frequency.

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| Company | Comment/suggestion |
| ZTE | Maybe we can mark non-AI column as optional |
| OPPO | 1. For “Channel correlation coefficient between two frequency layers”, there are different correlation coefficient, such as PCC (Pearson Correlation Coefficient), Spearman Correlation Coefficient and Kendall Correlation Coefficient. Given that PCC is simple for use, we can state it clearly that the coefficient is PCC to reduce the ambiguity2. We found that some companies have reported below assumptions in the “other factors” column. How about capturing them to be separate columns?

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| Inter-frequency correlation assumption in general (yes or no) |
| Inter-frequency shadow fading correction (e.g. full, partial, no) |
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## Scenario 6

Please provide comments on the spreadsheet example for Scenario 6: RRM Measurement Prediction Evaluation results for spatial.

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| Company | Comment/suggestion |
| ZTE | Maybe we can mark non-AI column as optional |
| OPPO | Similar to other scenarios, having another main group to reflect the performance of non-AI or simple AI models would be better. |
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## General Rules for Filling the Table

The rules for filling out the table are as follows:

1. Please adhere to the format provided in the example as much as possible. Certain columns, such as "Other Factors, details of AI model" do not have strict content restrictions.
2. Please make sure to keep the same parameter units as the template provided.

Companies are encouraged to provide additional rules to facilitate the recording of simulation results.

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| Company | Comment/suggestion |
| OPPO | For ease of data analysis, we propose that each blank can only be filled with one value. For example, only one value can be reported in “Last predicted point L3 cell RSRP difference (dB)”. We’d better avoid reporting a set in it, e.g., [0.2, 0.34, 0.56]. |
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# Conclusion

# Appendix-RAN2 Agreement in RAN2#127bis

* *For intra-frequency temporal domain, higher UE speeds result in larger prediction errors*
* *Initially, increasing the OW length can enhance prediction accuracy in the temporal domain case A, especially when the OW is relatively short. However, once the OW exceeds a certain threshold, further increases do not yield significant benefits. Conversely, for PW, longer durations correlate with decreased prediction accuracy. RAN2 will not define the actual threshold and fast fading assumption.*
* Majority of companies observe that among sub cases 1, 2, and 3, at least with shorter prediction window sub case 2 demonstrates the highest prediction accuracy
* Companies can provide multiple real time RSRP value(s) and/or average RSRP value over the entire window and should indicate in their simulation results what they have used. The companies should at least provide the results of only one value it should be the last value at the end of the PW. We will add two columns in the spreadsheet to capture the last value and the average value.
* Companies need to report whether earlier predicted results are also used as inputs for future RRM prediction.
* Companies should report with their simulation the correlation coefficient

* Higher-to-lower and lower-to-higher frequency prediction is comparable

For co-located scenario, the UE speed in the inter-frequency case has minor impact on

* prediction accuracy
* Companies are free to consider non-AI or simple AI models