**3GPP TSG RAN WG2 #118-e R2-22XXXX**

**Electronic Meeting, 9th May – 20th May 2022**

**Source: vivo**

**Title:** **[AT118-e][081][TEI17] Early Measurements for EPS fallback (vivo)**

**Agenda Item:** **6.21.2**

**Document for: Discussion and Decision**

1. Introduction

This contribution is for the following offline discussion.

* [AT118-e][081][TEI17] Early Measurements for EPS fallback (vivo)

 Scope: Discuss one more round, verify whether there is impact in other group, verify that the impact in RAN2 can be kept reasonable, collect comments on the CR

 Intended outcome: Report

 Deadline: For CB W2 Friday (CR by Post discussion if applicable)

1. Discussion
	1. **Background**

During RAN2 118 meeting, EPS fallback enhancement was discussion.

EPS fallback early measurements

Performance estimates are now provided and can be considerd

[R2-2205884](file:///C%3A%5CUsers%5Cmtk65284%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2_RL2%5CTSGR2_118-e%5CDocs%5CR2-2205884.zip) Latency Reduction during EPS Handover Fallback Vodafone GmbH discussion Rel-17

[R2-2206118](file:///C%3A%5CUsers%5Cmtk65284%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2_RL2%5CTSGR2_118-e%5CDocs%5CR2-2206118.zip) Latency Reduction during EPS Handover Fallback Vodafone GmbH discussion Rel-17

* Noted

[R2-2205054](file:///C%3A%5CUsers%5Cmtk65284%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2_RL2%5CTSGR2_118-e%5CDocs%5CR2-2205054.zip) Early measurement for EPS Fallback vivo, China Telecom, CMCC, SoftBank, China Unicom, Vodafone, Ericsson discussion Rel-17 TEI17 R2-2201398

* Noted

DISCUSSION

* The main difference is that 5054 includes SIB broadcast of frequency, while 6118 prescibes that UE just uses stored information.
* QC can accept to have a list of frequencies where VoLTE / EPS fallback is supported but nothing more, no impl in the context of early measurements.
* MTK think redirection is used and think the measured quality doesn’t need to be so good, just voice call. Think the VDF proposal bring limited gain, as the UE would start measure very late. Vdf think this is not late.
* Apple share similar concern as MTK, think that time duration for measurements may be longer than required paging response time. Think there is a risk of waste of measurement. VDF think paging is in most cases paging is for voice. VDF think that measurements are in parallel with the paging reply procedure.
* Nokia agrees that if the measurements are done when paging is received, the result might not be good, but can maybe work if UE measures in the BG. Wonder what is the TS impact of VDF proposal. VDF clarifies that it is just stage-2 text and the text says that the UE can measure when paging is received.
* LGE similar opinion as MTK and Nokia. Similar proposal was proposed to R18 Mob enhancement, UE measuring while connecting, but this was excluded pin R2, resulted only in R4 impact. LGE can accept a list of freq as QC proposed, treated as assistance info with no particular requirements
* ZTE think < 100ms is required to do the access procedure, and no time to do measurements during this time. On the vivo proposal, think that early measurements is not so useful, as Idle mode requirements are so relaxed.
* Huawei agrees that measurements will take 100’s of ms and access procedure is faster.
* QC think the UE need gaps (normally) so once the UE attempts connection there will be measurements done, so there is no time.

Chair: It seems the VDF proposal that the UE start measuring when paging is received will not work for many/most UEs, as the connection procedure is fast and most UEs anyway require gaps.

Chair: THEN what is the interest to support that UE can do measurements in the BG to have measurements available? E.g. following the EMR.

* Apple think RAN4 need to be involved for this.
* Vivo think some UEs may have measurements for cell reselection, or Idle measurements as early measurement for CA/DC. Vivo think most UE can do parallel measurements. Vivo think we can just reuse the RAN4 requirements for EM, no additional impact.
* Ericsson support the use of early measurements for this, but think measurement quality may need to be ensured.
* BT has a concern that the network cannot know which frequency that the UE measures.
* ZTE wonder if this means that EMR is configured all the time. ZTE think this is a waste of battery.

Object: Apple MTK QC would object.

Supporters: 7 companies

Chair wonder if there can be a compromise, e.g. if we just indicate in Stage-2 that UE can do measurement in Idle or Inactive in preparation for EPS fallback, up to UE impl. SIB indication of frequencies. Expect no mandatory requirements.

* MTK would be ok with such compromise.
* Vivo would be ok, VDF would be ok. Softbank would be ok.
* Xiaomi think reporting of measurements is needed. Vivo think not. Xiaomi think redirection need to be guided by measurements. VDF think that measurement reporting is needed.
* Nokia cannot agree anything now unless the proposal is more clear.

Chair: the most promising direction seems to be the reuse of EMR.

* Proponents can get one chance to convince opponents offline (vivo)

[R2-2205055](file:///C%3A%5CUsers%5Cmtk65284%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2_RL2%5CTSGR2_118-e%5CDocs%5CR2-2205055.zip) 38331 CR for Early measurement for EPS Fallback vivo, China Telecom, CMCC, SoftBank, China Unicom, Vodafone CR Rel-17 38.331 17.0.0 2872 2 B TEI17 R2-2201399

* 1. **Compromise solution**

There is compromise proposal for introduction on **candidate EPS fallback target frequencies** in SIB and UE can do measurement in Idle or Inactive in preparation for EPS fallback, up to UE impl. The following is understanding about the compromise solution:

1. The NW could broadcast some **candidate EPS fallback target frequencies** in SIB (as assistance information).
2. The UE could measure the target frequencies **by implementation**. No reporting in EMR framework.
3. After the UE goes to connect mode
	1. If the network want to have measurement report. It can configure normal connected mode measurement on the target frequency.
		1. If the UE has performed measurement on the same target frequency based on SIB configuration. The required time for UE to send the report may be reduced.
		2. However, there is no UE requirement to speed up the process.
	2. If the network want to use blind redirection. It can just redirect the UE to the target frequency.
		1. If the UE has performed measurement on the same target frequency based on SIB configuration. The required time for UE to camp on a cell on that frequency could be reduced.
		2. However, there is no UE requirement to speed up the process.

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| **Company**  | **What is your understanding about the comproimise soluiton? And any comments?** |
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* 1. **CRs on compromise solution**

There are two CRs for compromise proposal, one is TS 38.331 another is TS 38.300.

For TS 38.331, we suggest the below change, i.e. only add measVoiceFallbackcarrierList-r17 in MeasIdleConfig which

is in SIB. The field description is as following.

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| **Company**  | **Do you agree the change in TS 38.331? And any comments?** |
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For TS 38.300, We suggest the below change

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| **Company**  | **Do you agree the change in TS 38.300? And any comments?** |
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1. Conclusion

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